

# FLIGHT

*The*  
AIRCRAFT ENGINEER  
AND AIRSHIPS

*FIRST AERONAUTICAL  
WEEKLY IN THE  
WORLD*

*Founded in 1909 by Stanley Spooner*

DEVOTED TO THE INTERESTS,  
PRACTICE AND PROGRESS  
OF AVIATION

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## Salesmanship

IT was a brilliant inspiration which prompted the Society of British Aircraft Constructors three years ago to hold a Hendon garden party on the Monday following the R.A.F. Display and so give the foreigners visiting London a chance to examine the latest British aeroplanes at close quarters. Many of the latest types are to be seen on the Saturday in the park for new and experimental types, and last Saturday there was a constant throng of spectators all round this park until 19 hours, over an hour after the Display was over, when the police politely asked them to go home. This shows the increasing interest which the British public is taking in the technical side of aircraft progress, but it is not likely to swell the sales of British aircraft to any great extent.

The great crowd of guests which accepted the hospitality of the S.B.A.C. last Monday was ample evidence of the high reputation enjoyed by British aircraft abroad. Certainly the English language was heard at intervals on the aerodrome, but it was almost drowned by the Babel of innumerable foreign tongues. As the chairman of the S.B.A.C. remarked in his speech, even the League of Nations had not attracted so many foreigners to one place. Some perhaps only wanted to estimate the value of British air power in the coming years, and we are very glad that the world should know that our designers are not exactly standing still. Others, doubtless, were considering the purchase of machines from a country whose reputation for sound workmanship is unrivalled. The S.B.A.C. made them all welcome, and gave them every opportunity to examine the aeroplanes on the ground and to judge of their performance in the air. It was good salesmanship, and the result, we hope, will be to gladden the heart of the Chancellor of the Exchequer by increased exports of British aircraft and accessories.

## Air Mail Service

THE air mails, as has often been observed, are a sort of shuttlecock between the three departments of the Air Ministry, the Post Office, and the Treasury. In the past, the Post Office has, on the whole, been the least sympathetic. In the very early days it demanded reliability, which early air lines could not guarantee, and of late its position has been that it is for the Air Ministry to grant subsidies and it (the Post Office) is not going to spend any of its substantial surplus on helping the air mails to give greater help to the community.

Lately, however, the position has grown more promising. The Postmaster General, Sir Kingsley Wood, has stated that he would like to see more frequent air services and faster air services, and that his department was considering the whole matter thoroughly, though it might be some time before he could make a statement on the result of its deliberations. It is much to be hoped that the final result will be a low flat rate for Empire air mails such as exists for ordinary letters within the Empire, and perhaps also a lighter minimum weight for air letters. Assistance in the development of night flying would also be of the greatest benefit to the speed of communications, and it is surely an elementary business of the Post Office to provide as far as possible for the greatest possible speed in carrying letters about the Empire.

Help could also be given by permitting the K.L.M. to carry British mails between Hull and Holland. Of course there can be no question of granting any sort of contract or subsidy to a foreign company, but it seems rather absurd that when facilities exist for sending letters by a direct route between the north of England and Holland, it should be necessary that those letters must all pass through London. We are intensely patriotic as regards air mails, but

it can hardly be denied that air mails in general would benefit if a further demonstration of their utility were given by letting the K.L.M. carry them direct. Of course it would be better still if a British company were helped to carry mails across the North Sea, and at one time it seemed that that was a possibility. We feel likewise that it is not the best policy to encourage long flights over the sea in landplanes, but the Australian Government are going to subsidise Qantas Empire Airways for a service across the Timor Sea in four-engined landplanes, and no one has exclaimed against the enormity of that decision.

## The Danger of Petrol

THIS is the age of science, and science has accomplished marvels, but it cannot do everything. It has not yet conquered cancer, and it has not yet produced a means of extinguishing rapidly a sudden blaze of petrol. Our chief hope of avoiding fire after an aeroplane crash (unless scientists discover something hitherto unexpected) is to abolish the petrol engine and to use only heavy-oil engines. Some progress has been made, but there has been more progress abroad than in Great Britain, and this we cannot call creditable.

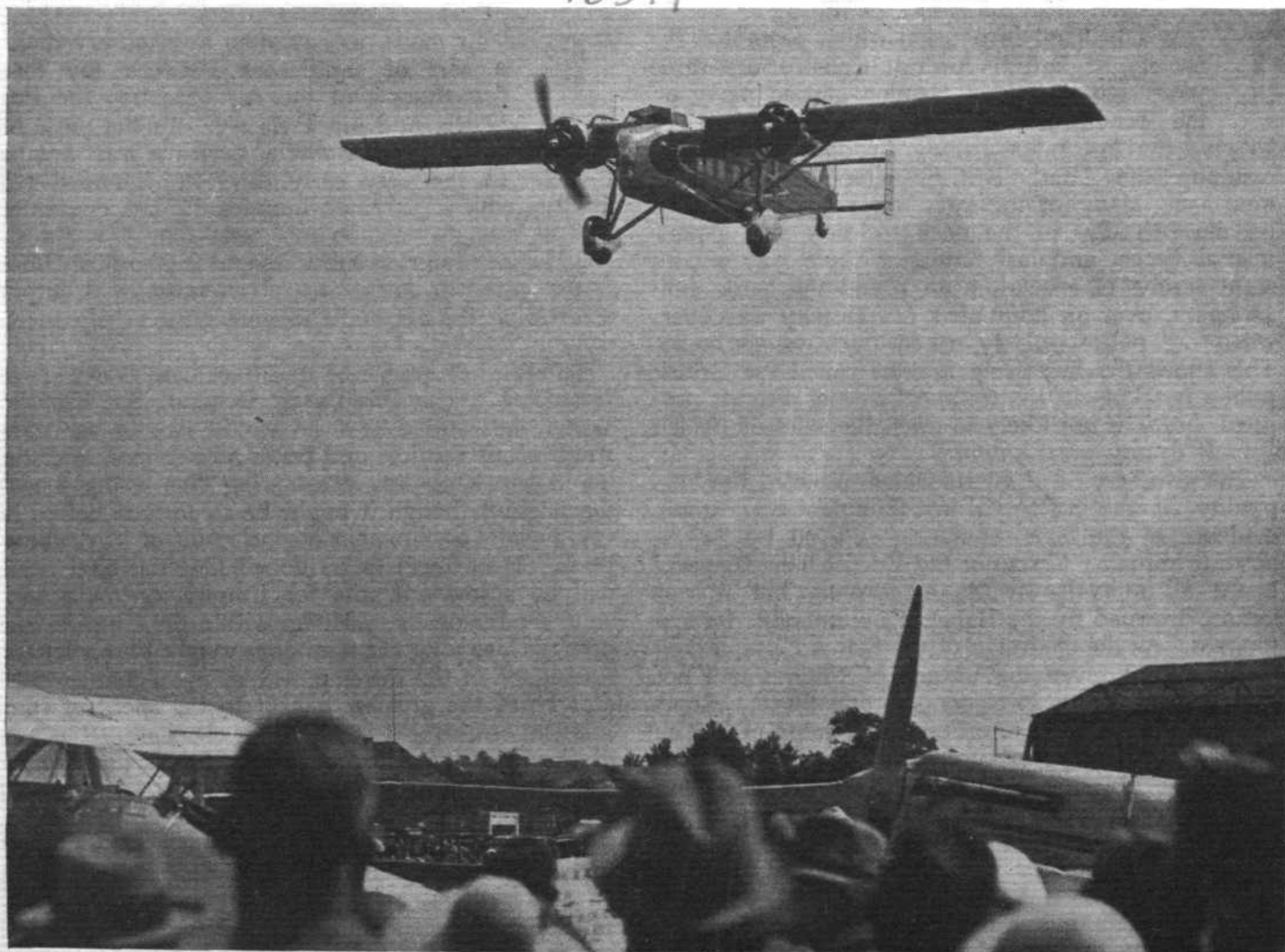
It does not necessarily follow that the substitution of heavy oil for petrol would save many lives, for in the vast majority of crashes, where fire has broken out after the machine has hit the ground, the

occupants have been killed by the concussion before the petrol ignited. Still, even to save a few persons from one of the most dreaded forms of death would be a very great achievement, and in any case the fire always adds to the horror of the tragedy, and sometimes prevents the cause of the accident from being discovered.

## Weight and Health

THE *Lancet* has devoted an article to a series of investigations on candidates for the Royal Air Force, which have indicated that what are called overweight candidates are better able than the underweights to endure severe and prolonged stress, and are less likely to suffer from disease. This is rather astonishing, but we presume that the term overweight does not simply mean fat. Much of the duty of the R.A.F. is done in hot climates, and in the tropics it is certainly a great advantage to be a lean man. Large bone and muscle are more likely to be the qualities which are found desirable, and the days are past when authorities wondered if an aeroplane would lift a heavy pilot. It would be interesting to have some figures to show whether heavy men make better pilots than light men do. Good hands have sometimes been supposed to go rather with the jockey type of build, but it is by no means certain that this supposition would be verified by scientifically compiled statistics.

105195



"ICH DIEN": H.R.H. the Prince of Wales arriving at the R.A.F. Display in his Vickers "Viastra" (two Bristol "Pegasus" engines). It is to be hoped that the practical example set by the Prince will encourage considerable numbers of the 100,000 or so who saw his arrival at Hendon to make more extensive use of air travel. (FLIGHT Photo.)



# The Outlook

## A Running Commentary on Air Topics

### Robbing Peter to Pay Peter

THE Chancellor of the Exchequer was making no slip in his mental calculations when, in the course of a reply to a question by Mr. Lindsay Everard in the House, he remarked that he would much prefer to arrange a subsidy than to make a reduction in the petrol tax. The latter, he remarked, would not affect the aircraft industry to any great extent.

Considering clubs and schools by themselves, last year the tax on the petrol used was, roughly speaking, £2,000 greater than the subsidy paid. In other words, Mr. Chamberlain is taking £15,000 a year in tax and returning some £13,000 or so in subsidy.

Machiavellian or Gilbertian, as you please, but a trifle hard on the clubs—quite apart from the struggling airline companies.

### Flaps and Brakes

SINCE the days when wheel brakes and "flaps" first started to appear on American machines, there has been considerable misunderstanding about their real value, even among more than casually interested persons. The normal answer to any inquiry is that "flaps" lower the landing speed and that brakes reduce the landing run. Both of these are facts in the case of a few specially designed machines, but are not even the primary uses to which such accessories can be put in normal operation.

Anybody who saw the flights of unbraked "Harts" and "Bulldogs" being manoeuvred with men at each wing tip and with somewhat magnificent fuss and bother, will have realised the inestimable boon of differentially-controlled brakes. Some day, when variable-pitch propellers are a *sine qua non*, and take-off design difficulties thereby reduced, undercarriages will be placed far ahead of the centre of gravity, and the pilot will be able to apply his brakes with the confident vigour of a motorist on a dry road. Then, too, airports will have tarmac runways.

"Flaps" may, in special cases, reduce landing speed by giving the wings a higher lift, but their primary use in the case of passenger machines is that of glide steepeners. With really useful "spoilers," transport pilots could perform an absolutely straight approach without sideslipping—an alarming performance to the payload—or "rumbling in" on the engines, which is bad practice.

### Air Brakes for All

INCIDENTALLY, if "flaps" are necessary to the experienced passenger pilot, they are more than necessary to the amateur, whose judgment of height, distance and wind velocity is always shaky. If, by the movement of a handy lever he could flatten or steepen his glide while leaving his air speed constant, there would be no need for steep turns or violent sideslips near the ground, and it is during the performance of these manoeuvres that flying is most dangerous. With eyes on the ground, or on wing tips perilously scraping fences and hangar roofs, the amateur is holding his controls stiffly, and a slight tendency for the nose to drop is answered by a tighter grip and a slight backward movement of the stick—into a first-class spinning position.

This "tense" business appears to explain the manner in which perfectly viceless machines suddenly fall right out of the hand during a slow approach, when, at a safe height, the same machine can be glided in turns at the most outrageously nose-high attitudes without noticeable result.

Since it appears that the proximity of the ground makes a pilot ham-fisted, and that wind speed undoubtedly varies quite a lot near ground level, then the only foolproof approach is a straight approach. Such an approach is only feasible with the use of either air brakes or engine, and the first will be a far safer habit for the amateur.

### The Gliding Subsidy

IN the issue of June 14, FLIGHT advocated the grant of a subsidy to help the gliding movement. The Air Ministry has responded, and Sir Philip Sassoon announced on June 29 that it had been decided to form and

maintain a properly organised central gliding school—which FLIGHT had also advocated—and to make a small capitation grant to approved clubs for each certificate taken out by their members. This last form of help, as we mentioned, is of rather doubtful utility by itself, but, taken in connection with the institution of the central school, it may do more good than harm. At any rate, it is a great step forward that the Government have now officially recognised the gliding movement as likely to be of good service to the country.

### Aviation and Finance

JEWS are always conceded to be sound business men and their advent into any particular trade is looked upon as a sign that that trade is on a sound footing, offering scope for making money. Their sagacity and insight into financial matters has not hitherto been directed to any great extent to the aviation industry, but now we look like benefiting from their ability to make a success of anything in which they interest themselves. We understand that a Jewish group have already acquired an aerodrome in the South of England, and no doubt this purchase will be followed not only by improvements in the running of that particular property, but also by the acquisition of other similar properties.

### Variable Pitch Airscrews

CIVIL aeroplanes, particularly high-speed ones, must, if they are to be a commercial proposition, be designed so that they will carry a greater pay load than is, at present, generally possible. In this country, at any rate, one of the limiting factors to an increase in this direction is the necessity for having a comparatively low wing loading in order that the take-off may not be so long that the aeroplane cannot operate from anywhere except the largest aerodromes. One of the means whereby the pay load may be bettered without increasing the loading is by the use of variable pitch airscrews. Before long de Havillands will, we hope, be turning out Hamilton variable pitch airscrews under licence, and then we may expect to see aeroplanes like the D.H. 86 have their pay load increased while retaining the present take-off, or, alternatively, have the take-off bettered while retaining the present pay load. In both cases there would probably be an increase of cruising speed.

### Lord Londonderry and the Durham Bomber Squadron

IT is announced that H.M. the King has approved the appointment of the Marquess of Londonderry as Hon. Air Commodore of No. 607 (County of Durham) (Bomber) Squadron, Auxiliary Air Force. Lord Londonderry, in addition to being Air Minister, is Lord Lieutenant of the County of Durham and Chancellor of Durham University. It is to be hoped that this honour done to the squadron will have the effect of stirring up the young men of Durham and placing the county squadron on a footing more like what it ought to be. According to the current *Air Force List*, the squadron can only boast, in addition to the three regular officers who are posted to each auxiliary squadron, one squadron leader, four pilot officers, and a medical officer. Sqd. Ldr. Walter Runciman, the Commanding Officer, is well known as a good civilian pilot, as well as the member of a famous family. It is surprising that he has not been better supported by the young men of the county.

The other A.A.F. squadron in the North, No. 608 (North Riding) (Bomber) Squadron, stationed at Thornaby, is slightly better off, having, in addition to the nucleus of regulars, one squadron leader, two flight lieutenants, five flying officers, one pilot officer, an accountant officer, and a medical officer. That, however, is not enough. It is surprising that, so far as the A.A.F. goes, the North of England should not equal the flying enthusiasm of London, the Midlands and Scotland.



**W**E have had fifteen Royal Air Force Displays, and the first fourteen of them passed without any accident of consequence. That is a marvellous record, and speaks volumes for the great skill of the Royal Air Force and for the degree of safety which can be attained in flying which looks, to the uninitiated, highly risky. Unfortunately, this record was broken on Saturday, when there was a crash in which Sqd. Ldr. Stanley B. Collett, the commanding officer of No. 600 (City of London) (Bomber) Squadron of the Auxiliary Air Force, lost his life, and F/O. R. F. G. Lea was slightly injured.

But for this tragedy, the Display of 1934 was a great success. Weather is a great factor in all open-air functions in England, and on Saturday things could not have been better and brighter. The sun shone out; but there was a cooling breeze—in fact, it was a perfect June day.

A distinctly new note was struck by the arrival by air of the Prince of Wales, who came as the representative of H.M. the King and therefore flew the Royal Standard. With that flair for doing just the right thing at the right time, which makes the Prince such a peculiarly worthy member of the Royal House, His Royal Highness arrived at Hendon by

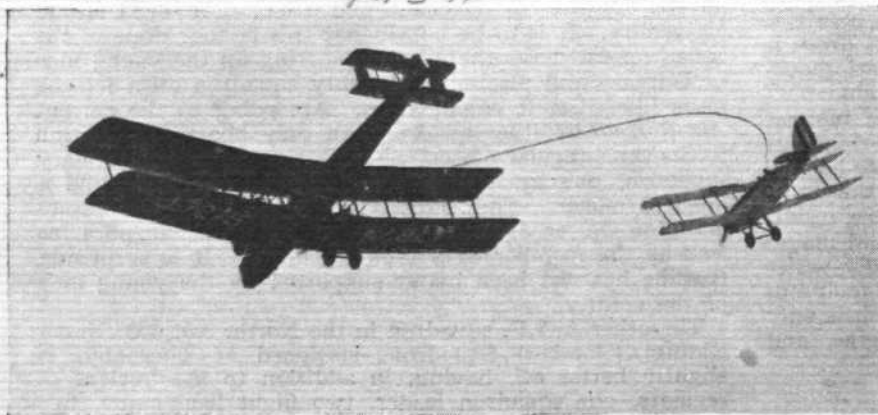
## THE FIFTEENTH ROYAL AIR F

*Ideal weather helps the  
Success. On Saturday the  
mination of the Year's Servi*

air in his own private "Viastra." People often read in the papers that the Prince travels by air, but very few have actually seen him doing so. On Saturday a vast crowd had the evidence of their own eyes that he really does fly in his own machine. By this action the Prince must have made thousands of converts to the cause of air travel.

As for the performance, it is hard for those who have seen all the 15 Displays not to become slightly hypercritical. The standard set in early years was so high, that when one sees something which is really very good, one is inclined to reflect that it was not quite up to the same pitch of excellence achieved in 192—?

Judged by the standard of past years, we should say that the Display of 1934 was well up to the average, but not above it. The absence of antiquated types of aeroplane (barring the "Virginias") was welcome, and the selection of flying boats, in particular, showed progress. We hope more squadrons will soon be equipped with some of these modern types. Perhaps the most striking episode of the whole Display was the performance of the C.30 Autogiro in Army co-operation work. There we really seemed to be peeping into the future. Some of the synchronised events were synchronised too far to the South, behind the backs of most of the spectators. They would



**REFUELLING:** A demonstration of mid-air fuel supply. The "Tanker," a Vickers "Virginia," has dropped its pipe line, and the observer of the "Wapiti" has just secured the end. (FLIGHT Photo.)





# CE DISPLAY

Event of the Year towards  
Standard of Flying in the Cul-  
minating was as high as ever

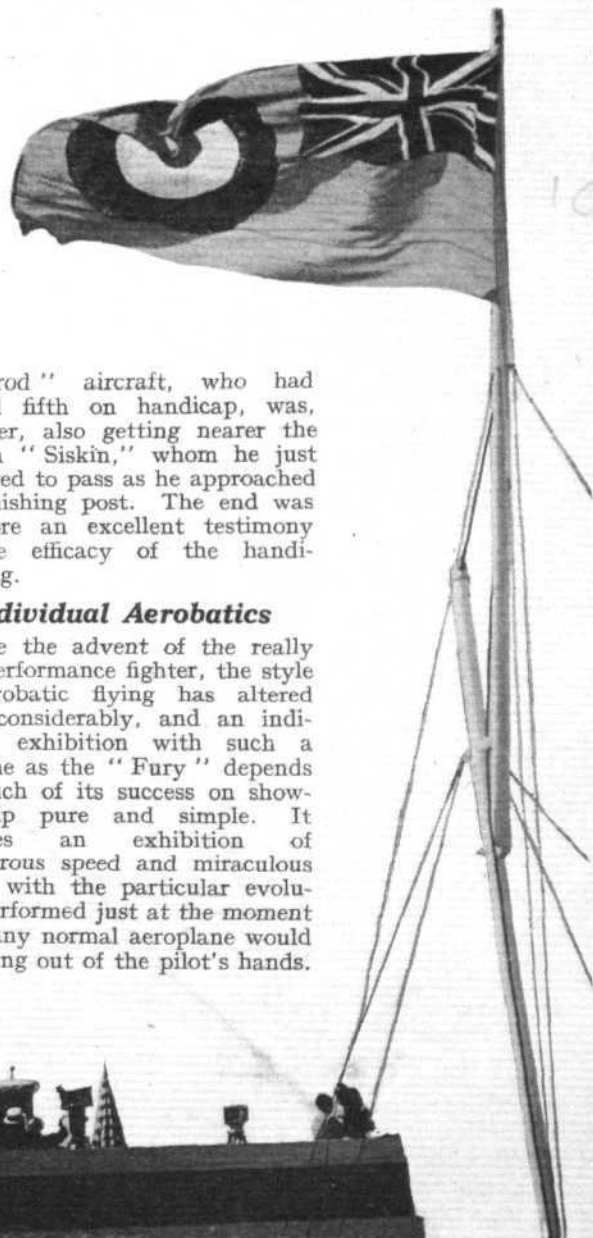
look well from the East end, but only those in the Royal enclosure and a few privileged parties watch from that angle. We still think it would be better to revert to the old plan of placing the Royal box in the centre of the South side and allowing the aerobatic machines to fly from East and West. All the flying was good, and if there was nothing which made us exclaim: "That is the best ever!" it is only because, as we confessed above, we have become rather *blasé* of that which is only very good.

## PRELIMINARY EVENTS

### Headquarters Race

A race over two laps of a course approximately 14 miles long, called the Headquarters Race, is an annual event at the Display. This year the entry, which is open to the officer of each of the Headquarters Commands, included one from the Central Area in addition to those of last year. Both Sqd. Ldr. Wray (Coastal Area), the ultimate winner, and Flt. Lt. Adams (Halton) were in last year's race.

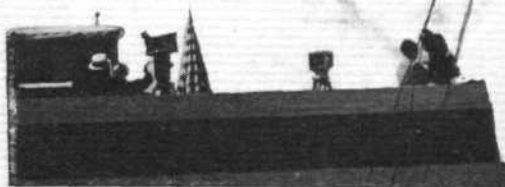
The wind direction necessitated a take-off directly away from the main body of the spectators, followed by a sharp turn over the aerodrome boundary facing them. Thereafter the course, for the most part, lay in full view of everyone, so it was possible to follow the machines as they made their turns. The handicapping appeared excellent, although for a long time it looked as if the limit man, the Halton entry, would maintain his lead to the finish. The scratch man, Wing Com. Penderel, Fighting Area, had already overtaken several others when he came round over the enclosures on the first lap, and from then on he could be seen overhauling other machines steadily. Sqd. Ldr. Wray, of the Coastal Area, flying one of the Fleet Air Arm



"Nimrod" aircraft, who had started fifth on handicap, was, however, also getting nearer the Halton "Siskin," whom he just managed to pass as he approached the finishing post. The end was therefore an excellent testimony to the efficacy of the handicapping.

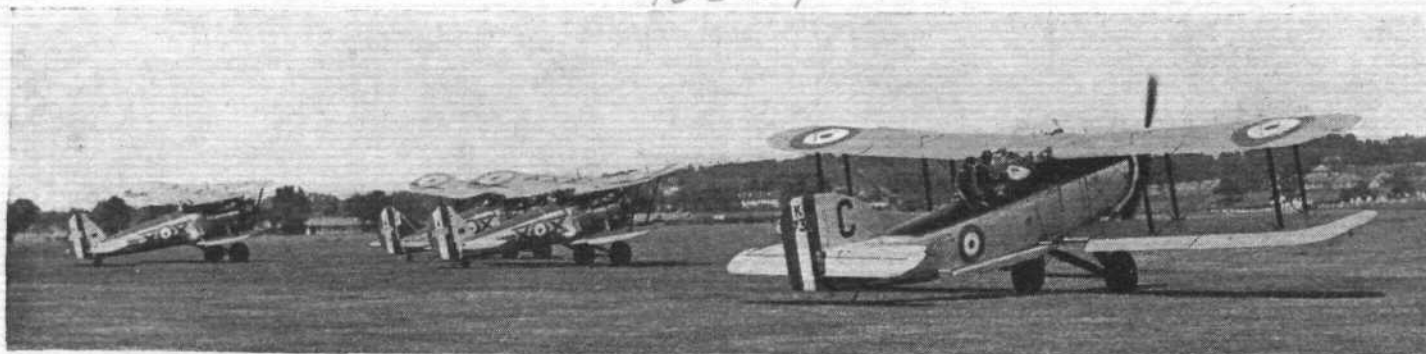
### Individual Aerobatics

Since the advent of the really high-performance fighter, the style of aerobatic flying has altered quite considerably, and an individual exhibition with such a machine as the "Fury" depends for much of its success on showmanship pure and simple. It becomes an exhibition of thunderous speed and miraculous climb, with the particular evolution performed just at the moment when any normal aeroplane would be falling out of the pilot's hands.



**HULLO EVERYBODY! R.A.F. CALLING:** The source of supply for the many loud speakers located at various points around the aerodrome, which kept visitors informed about the day's proceedings. (FLIGHT Photo.)

105275



**FOR GUNNERY TRAINING:** Three Bristol "Bulldog II.A" ("Jupiter VII.F.P.") of No. 29 (Fighter Squadron) and a Fairey "Gordon" ("Panther II.A") start off to give a demonstration aerial target practice. The target is towed by the "Gordon," and the "Bulldogs" swoop down on the former and fire at it with their machine guns. (FLIGHT Photo.)

*Headquarters Race*

Headquarters Represented.	Pilot.	Aircraft and Engine.	Final Plac-ing.
Air Ministry ..	Wing Com. H. P. Lale	"Osprey" ("Kestrel IIMS")	
Air Defence of Great Britain ..	Sq. Ldr. J. W. Grigson	"Hart" ("Kestrel IB")	
Western Area ..	Wing Com. F. W. Stent ..	"Hart" ("Kestrel IB")	
Central Area ..	F/O R. G. Shaw ..	"Hart" ("Kestrel IB")	
Fighting Area ..	Wing Com. H. W. Penderel ..	"Fury" ("Kestrel IIS")	
Inland Area ..	F/O G. F. Heycock ..	"Audax" ("Kestrel IB")	
Coastal Area ..	Sqd. Ldr. A. M. Wray	"Nimrod" ("Kestrel IIMS")	1
No. 1 Air Defence Group ..	F/O E. S. Drury ..	"Bulldog II.A" ("Jupiter VII.F.P.")	3
Halton ..	Flt. Lt. C. D. Adams	"Siskin IIIA"	
Cranwell ..	Sqd. Ldr. S. P. Simpson	"Hart" ("Kestrel IB")	2

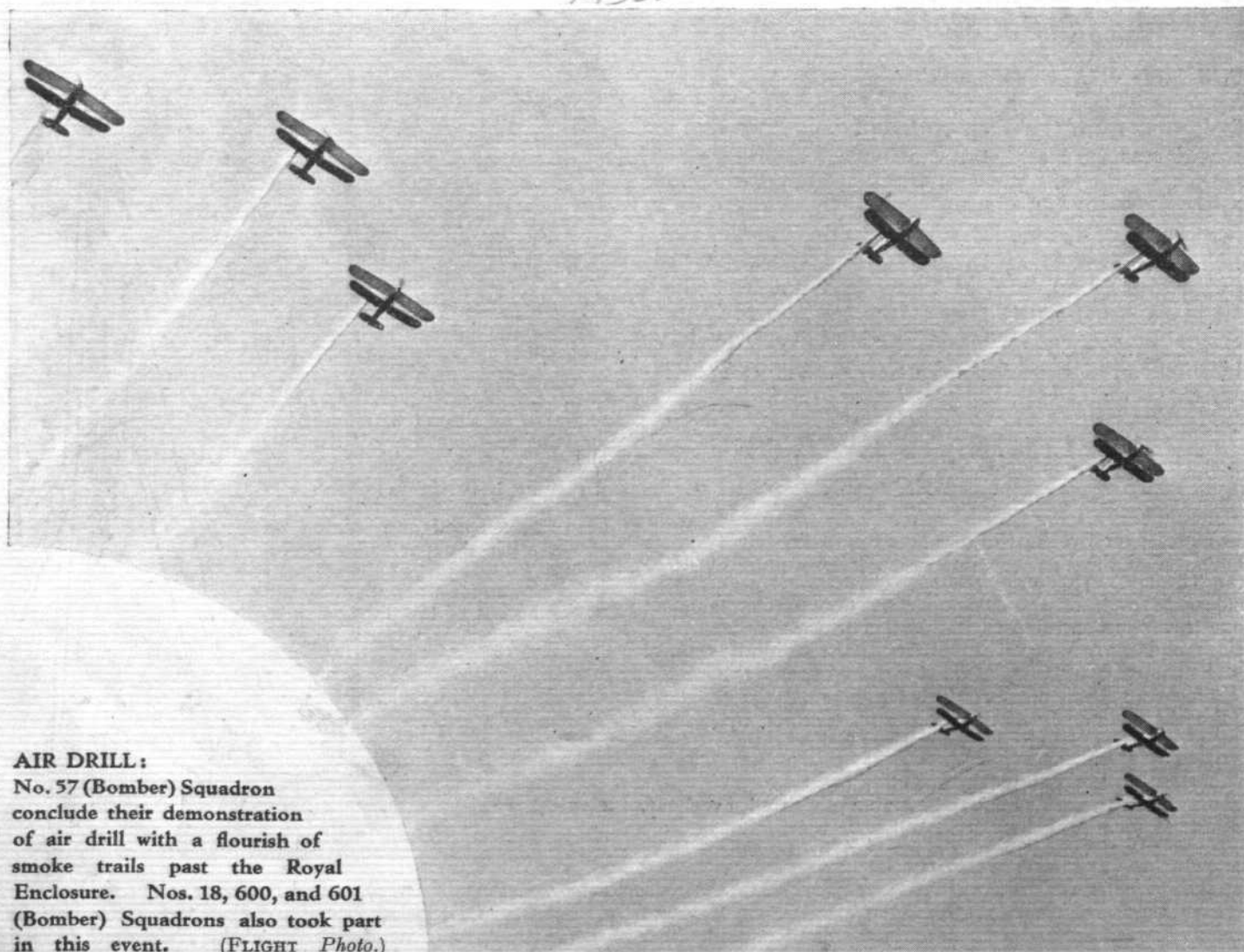
F/O. J. L. M. Davys, of No. 1 (Fighter) Squadron, proceeded at once to interest the crowd by climbing in true interceptor fashion and by rolling at the same angle. Then he turned and roared across the aerodrome to start a "rocket loop"—which is, in fact, a prolonged "zoom" followed by a small radius loop and is a most impressive manoeuvre—which terminated again in a half roll, immediately followed by more rolls and by another rocket loop.

Every manoeuvre, except the slow roll, was one that would be normally used in air combat, and each was beautifully executed and placed. Finally, the machine was dived past the enclosures and the "zoom" finished in a full throttle stalled turn.

**Refuelling in the Air**

In the next event we saw a demonstration of refuelling while in the air, an operation which may be desirable on long distance or duration flights, not only for Service air-

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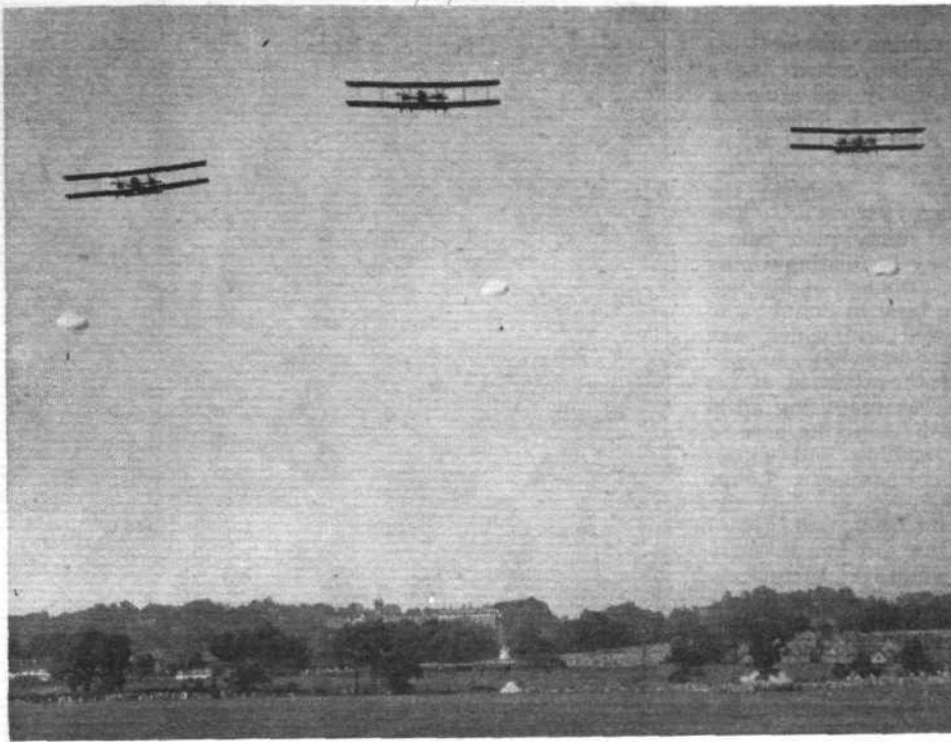


**AIR DRILL:**

No. 57 (Bomber) Squadron conclude their demonstration of air drill with a flourish of smoke trails past the Royal Enclosure. Nos. 18, 600, and 601 (Bomber) Squadrons also took part in this event. (FLIGHT Photo.)



14380



**SAFETY FIRST :** All R.A.F. pilots and observers are equipped with Irvin parachutes, and here we see a demonstration of a simultaneous drop from Vickers "Virginias" by the Parachute Section of the Home Aircraft Depôt. (FLIGHT Photo.)

"tanker" started to drop its pipe line, at the end of which was a weighted cord. The "Wapiti" thereupon manœuvred below and behind the "tanker" until the former's observer was able to secure the weighted cord—which he did after a circuit or two of the aerodrome.

Having secured the elusive cord the observer proceeded to haul in the pipe, the "Wapiti" meanwhile taking up a position just ahead, and slightly to one side, of the "Virginia"—below it, of course. The pipe having been connected to the "Wapiti's" tank, the two machines proceeded to circle the aerodrome, "tied together," fuel passing through

craft, but also in the case of Commercial flying. The method of carrying out such an operation was demonstrated by a Westland "Wapiti" ("Jupiter VIII F.") and a Vickers "Virginia" (Napier "Lion VA") of the Royal Aircraft Establishment, piloted respectively by Flt. Lts. S. R. Ubee and E. R. Healy.

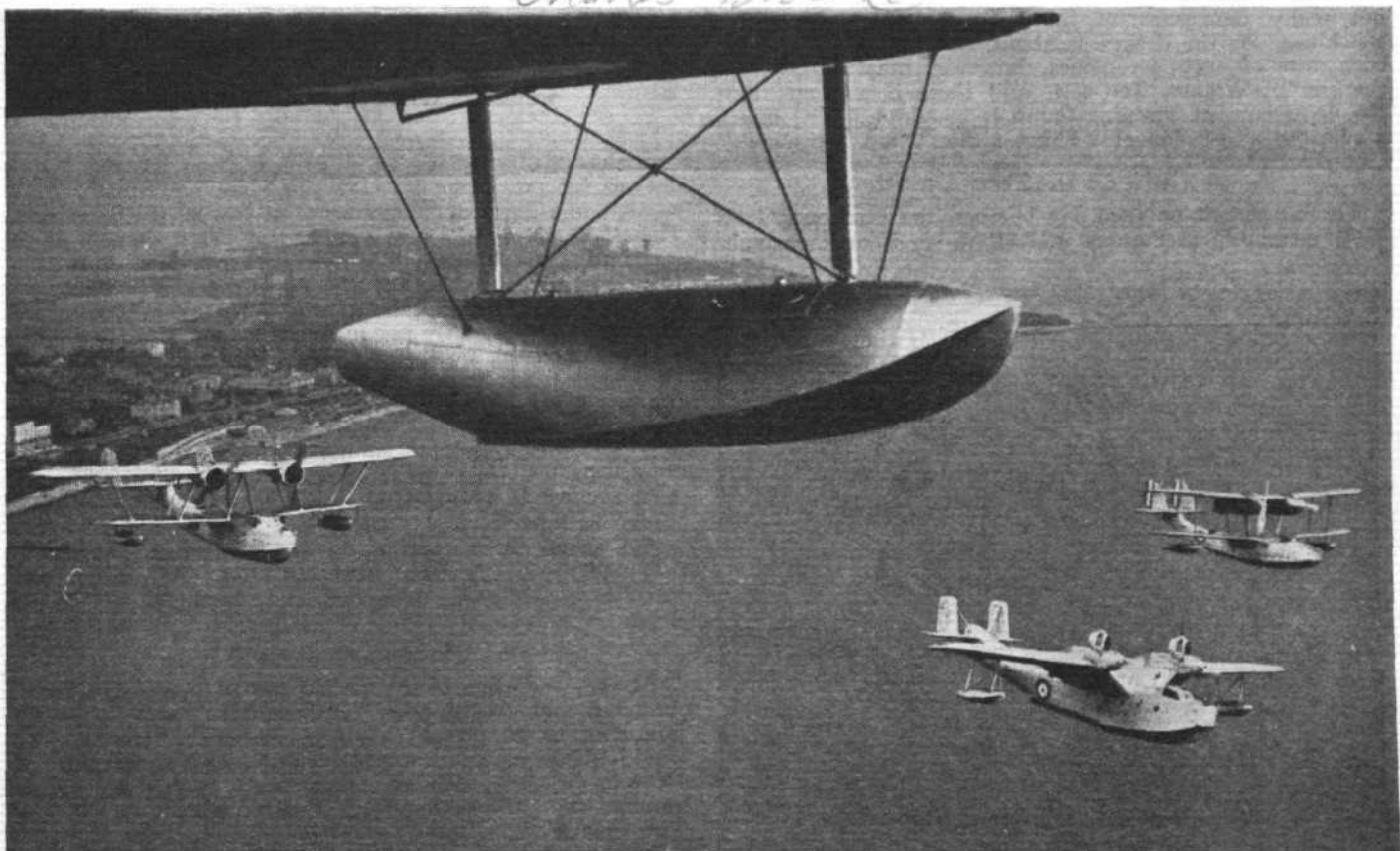
The "Virginia" was the tanker aircraft, and the "Wapiti" the thirsty individual. Both machines took off while the preceding event was concluding and circled "behind the scenes" until their "call," when they entered the stage side by side. Over the aerodrome, the

the tanker to the "Wapiti."

The relative position taken up by the two machines was not, we think, the same as that seen during a similar demonstration at a previous R.A.F. Display, and at times it appeared as if the pipe line was assuming awkward attitudes—somewhat too close to the "Wapiti's" tail. Actually, however, we believe it was well clear at all times.

After several circuits, the "Wapiti" filled its tanks, and, casting off the pipe, returned with the "Virginia," to the aerodrome.

Charles Brown (C)



**FLYING BOATS :** One of the most interesting events of the Display was the "fly past" of flying boats. Three of them are shown here—the Saunders-Roe R. 24/31 (two Bristol "Pegasus") (left) ; the Short R. 24/31 (two Rolls-Royce "Goshawk") (centre) ; and the Supermarine "Scapa" (two Rolls-Royce "Kestrel"), all of the open-sea reconnaissance multi-seater type. This photo was taken from another of the flying boats, the Blackburn "Perth" (three Rolls-Royce "Buzzard"), during rehearsals at Felixstowe.

### Instructor and Pupil

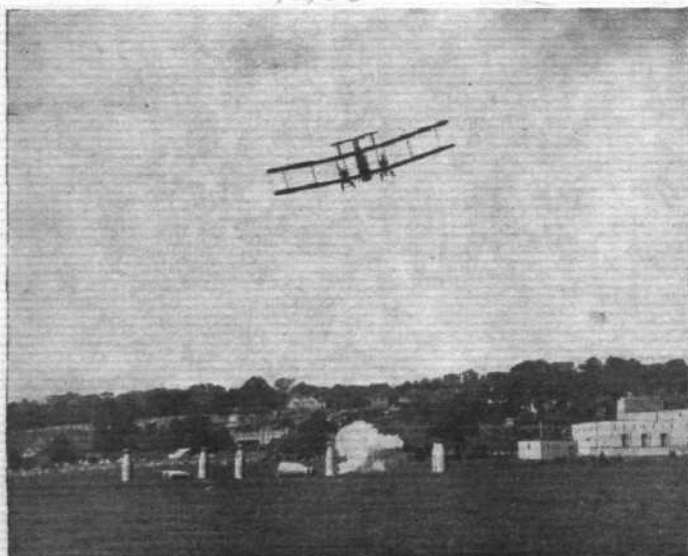
Although it was called, on the programme, Instructional Flying, Event D "went over" with the crowd like a music hall "turn" by a sophisticated dandy and a clown. The "dandy" was played by F/O. W. V. L. Spendlove, and his performance was parodied by Pilot Sergeant B. R. Tribe. Both are from No. 5 Flying Training School, and both flew Avro "Tutors" ("Lynx"). Hitherto the event has usually been given on Avro 504 N's. The "pupil's" machine was painted that dirty pink colour which is becoming popular at the Display for distinguishing "dangerous" and "enemy" aircraft, although at no time could the most ignorant spectator have been in doubt as to which of the aeroplanes was flying well and which was not. In attempting to keep formation the fledgeling managed to stay quite near his instructor, but the attitude of his machine gave the impression that he was practising all-in wrestling with his controls. In a turn he kept the nose of his "Tutor" pointed heavenwards, stalling and subsequently spinning in a most convincing manner. Loops seemed to worry him. He never could quite get over the top. In rolling he managed to get on his back, and seemed like staying there for the rest of the day until some unknown control movement brought him tumbling out. But most amazing of all was his landing, when he aimed his "Tutor" at the ground and made that much abused aircraft grunt with indignation and leap upwards like a cat on hot bricks.

### Air Gunnery Training

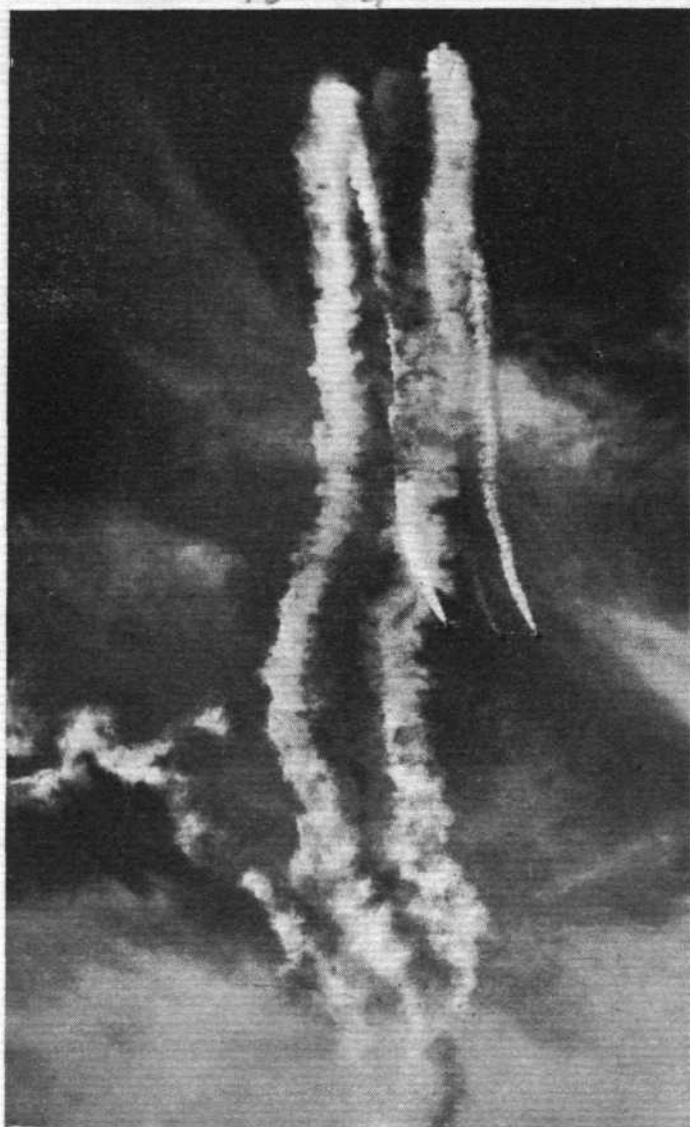
Three pilots of No. 29 (F) Squadron made a large scale shooting gallery of the Hendon sky, demonstrating with their "Bulldogs" various forms of attack on a drogue target towed by a Fairey "Gordon" of No. 3 Armament Training Camp. The announcer explained that this machine was flying at 100 m.p.h., and that a hit on the forward part of the drogue counted three points, and on the rear portion one point. Flying parallel to the "Gordon" the "Bulldogs" dived in succession at the target, fired a burst and reformed formation, repeating this performance each time the "Gordon" flew over the aerodrome. The noise of their Vickers guns was imitated by means unknown and broadcast to the crowd through the loud speakers. Blank ammunition was used, of course, although we understand that practice with live rounds is not really dangerous to the crew of the target-towing machines, for the drogue is about 1,000 feet astern. The occupants of such aeroplanes, however, must realise how the son of William Tell felt, and there is a report that No. 3 Armament Training Camp is to adopt for its motto a suitable translation of "Shoot father, I am not afraid."

### A Goliath v. Two Davids

Our latest twin-engined day bomber, the Boulton & Paul "Overstrand" (2 Pegasus I.M.3), which is an amazingly



**AERIAL SKITTLES:** An amusing and original event was that in which Vickers "Virginia" bombers of No. 99 (Bomber) Squadron flew low over a row of big skittles and endeavoured to "bowl" them over with their bombs. Here we see what was almost a direct hit. (FLIGHT Photo.)



**SMOKE:** Three of the "Bulldogs" from No. 19 (Fighter) Squadron about to weave a spiral of orange, green and white smoke trails. (FLIGHT Photo.)

manœuvrable aeroplane, and utilises some of the latest devices for protecting its crew from the air stream, gave combat to a flight of "Bulldogs" of No. 29 (F) Squadron. The "Overstrand," not yet having been issued as a standard type (although there are rumours that the "Sistrands" of No. 101 (B) Squadron are to be transformed into "Overstrands"), was flown by a Martlesham pilot in a unanimously commended fashion. We expected at least one loop, for twin-engined Boulton & Paul bombers of various types have been able to perform this manœuvre for many years past, but no doubt there was some good reason for its exclusion. One "Bulldog" soon fell to one of the "Overstrand's" gunners, possibly the one in the "hush hush" turret in the nose which, incidentally, may be revolved at a surprising speed. The victim made a smoky exit to the east. His comrades chased the bomber round sharp turns, getting in some sustained bursts of fire, and the battle raged loud and long. But the gallant invader was mortally wounded and, lurching, fell to its doom.

### A Surprise Item

At the conclusion of the aerial combat it was announced that our old friend the "Pterodactyl" was originally intending to be present amongst us that afternoon, and would oblige us by devouring weird monsters in mid-air. He was, however, sick and off his food, so sent his understudy, the "Oughtogyrso," with attendant, in an Avro 504 N.

Both ascended in search of dainty morsels, which were soon seen floating above the aerodrome. The Avro was the first to get a bite—a couple of pink pills for pale planes—but poor Oughto, who, we were told, could only devour his food downwards, had some difficulty at first in catching anything. In fact, Avro had bagged a pink elephant before

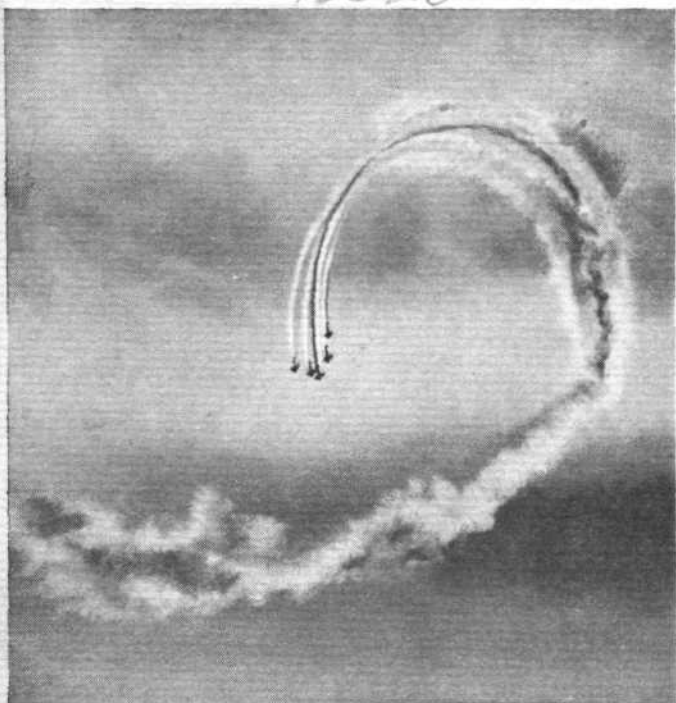


Oughto managed to secure a somewhat plump Yellow Jarndyce.

However, he succeeded in securing several succulent specimens and a few more pills before both got fed up and retired for an afternoon nap.

### Synchronised Aerobatics

Only with machines having the speed-range of the "Fury" is the perfect timing and placing of two machines, often a mile apart, possible, and even so the exhibition is a great deal more difficult than the average spectator would realise. During most of the manoeuvres the two pilots—this time P./Sgts. S. W. Bannister and S. Wroath, of No. 1 (Fighter) Squadron—must be watching one another, for not only must the machines operate as if one was a mere reflection of the other, but the converging



**MORE SMOKE:** Here all five of the "Skywriters" are seen designing beautiful coloured patterns on their blue "canvas." (FLIGHT Photos.)

manoeuvres must be timed so that they start directly over the centre of the aerodrome.

As usual, the overture was breathtaking. The two "Furies" dived together, pulled up into a vertical climb, stalled outwards, half-rolled into an inverted position and dived out. Then movement followed movement so rapidly that the eye was dazzled. Rolls, rocket loops, upward rolls, and slow rolls, were mingled in a perfectly synchronised pattern to the organ notes of the two "Kestrels."

### THE MAIN PROGRAMME

The afternoon programme opened with the take-off of the four squadrons of "Harts." No. 18 (B) Squadron led, followed by No. 57, No. 600 (City of London), and No. 601 (County of London). All went off in good style in squadron formation, and did a tour of the country while they waited for their turn to take the stage.

No sooner was the aerodrome clear than a Vickers "Viastra" painted with the Guards Club colours of red and blue on a silver ground flew over and landed. As soon as it was down a minute Royal Standard was run up over the pilot's cockpit, and the huge crowd sprang to its feet to greet the Prince of Wales. He had indeed set his Father's people a great example of air-mindedness by arriving in this way. As the machine taxied up to the Royal Enclosure, the band crashed out a stanza of the National Anthem.

### Synchronised Flight Aerobatics

For the first time synchronised aerobatics were performed on Saturday by two flights as well as by two machines. The manoeuvres in themselves were intricate enough without the necessity for synchronisation between the flights, which were made up of six pilots from No. 43 (Fighter)

Squadron. It was a performance for which there are no superlatives sufficiently superlative.

Last year the manoeuvre of rolling in flight formation was carried out for the first time, and it has lost none of its capacity for astounding the onlooker. A neat roll by itself is difficult enough; to roll while watching the flight leader's wingtips, while keeping formation, and while passing either over or under him at the moment when the machine is being held up by rudder is more than astounding; but to carry out the entire manoeuvre in time with another flight doing the same thing . . . that becomes a miracle of practice and efficiency. This year the machines appeared to hold tighter formation.

The human power of perception being what it is, however, the effect of this synchronisation was sometimes lost, simply because we were so enthralled by the work of a single flight that the second one had to be forgotten. After "crooked half-rolls," stall turns, rocket loops, rolls, and all the frills possible with the "Fury," came the masterpiece, and the almost equally staggering business of changing formation in the course of a flight manoeuvre. Forming line abreast, looping, and re-forming a close V during the latter half of the loop; looping in line astern and changing to echelon formation while coming off the top; a steep dive in echelon, changing to line astern, and turning through 180 degrees—every pattern perfect, and telling us of perfect discipline, of precise control, and of engines answering to the throttle like guardsmen to the voice of a sergeant-major.

Finally, when the spectators had stood on chairs and stepped off them again, and had worn themselves out with rolling eyes and open mouths, the flights joined up and broke away to right and left of the Royal Box with a crooked half-roll outwards. A performance worth all the traffic-crawling any visitor could possibly have suffered.

### Air Drill

There followed an exhibition of air drill by the four squadrons of "Harts" ("Kestrel"). First they flew past one behind the other in squadron formation, led by No. 18 (B) Squadron. Next time, as they passed over,



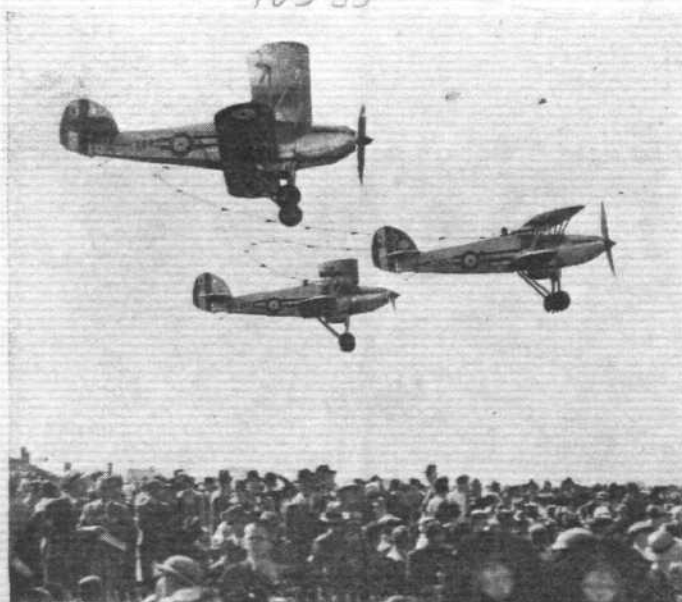
No. 18 changed to "squadron V," No. 57 to "squadron line astern," No. 600 to "flights line astern," and No. 601 to "flights echelon to the right." After each had crossed, all changed back smartly to "squadron formation." On the third passage No. 18 changed to "squadron echelon on the right," No. 57 to "squadron echelon to the left," No. 600 to "flights echelon to the left," and No. 601 to "flights line astern." On the last crossing they came in "squadron formation," and each squadron in turn dived in salute before the Prince of Wales. As they dived each machine emitted a trail of smoke, one flight all red, one all white, and one all blue.

As No. 600 (City of London) (B) Squadron climbed from its dive, one "Hart" left the formation and turned left, possibly with engine trouble. The pilot of the machine was F/O. R. F. G. Lea, and the commanding officer, Sqd. Ldr. S. B. Collett, was in the gunner's cockpit behind him. The pilot made for the west end of the aerodrome, losing height rapidly, and finally, at a low altitude, made an attempt to turn into the wind to land. In doing so he lost flying speed and stalled, one wing tip hitting the ground. The machine stood on its nose with great violence, and Sqd. Ldr. Collett in the back cockpit was killed instantaneously by the impact. The pilot was cut and bruised, but managed to get out of the machine. Some considerable time afterwards the petrol ignited, and the machine was burnt before it was possible to reach the body of Sqd. Ldr. Collett.

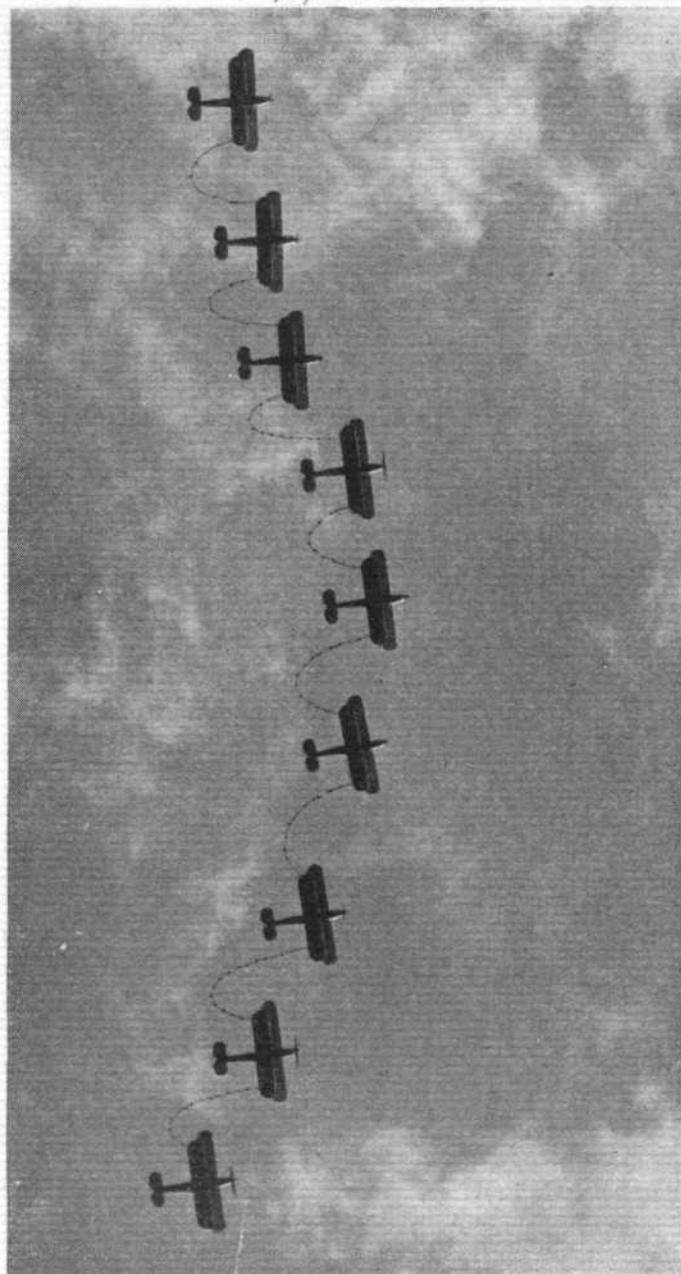
### Army Co-operation

This year the exhibition of aircraft working with the Army was given a place in the main programme. No. 2 (Army Co-operation) Squadron from Manston was the unit chosen for the performance, and they picked up their messages, sometimes in "line" and sometimes in "echelon" with very creditable accuracy. Whenever a hook on an "Audax" engaged a line with message attached, the pull released a puff of smoke, and so the whole audience could judge for themselves the accuracy of the work. Supplies were also dropped by parachute to troops in various places.

A most impressive item followed, when F/O. R. A. C. Brie (Reserve of Air Force Officers) showed how an Autogiro C.30 could be used for Army work. On the very first occasion when an Autogiro was shown at a R.A.F. Display it was flown by F/O. Frank Courtney of the R.A.F.O., who donned uniform for the occasion. This time an enclosure of white cords was hastily run up, and Brie put the Autogiro down in the middle of it without the slightest difficulty. Then he flew over, trailing a cord to pick up a message, and stood practically still in the air while a soldier on the ground leisurely tied the message on to the cord. The man did not even have to run; he performed his part almost at the halt. There can be little doubt that the Autogiro is the ideal way for a General to keep in touch with his troops. The effect is to be tried



**HULLO TRIPLETS:** A Flight of No. 19 (Fighter) Squadron come in to land with their connecting cords still unbroken. (FLIGHT Photo.)



**"UNITED WE FLY":** No. 25 (Fighter) Squadron on Hawker "Fury" ("Kestrel ILS") fly past "tied together." The connecting cords may be seen between the wing tips. (FLIGHT Photo.)

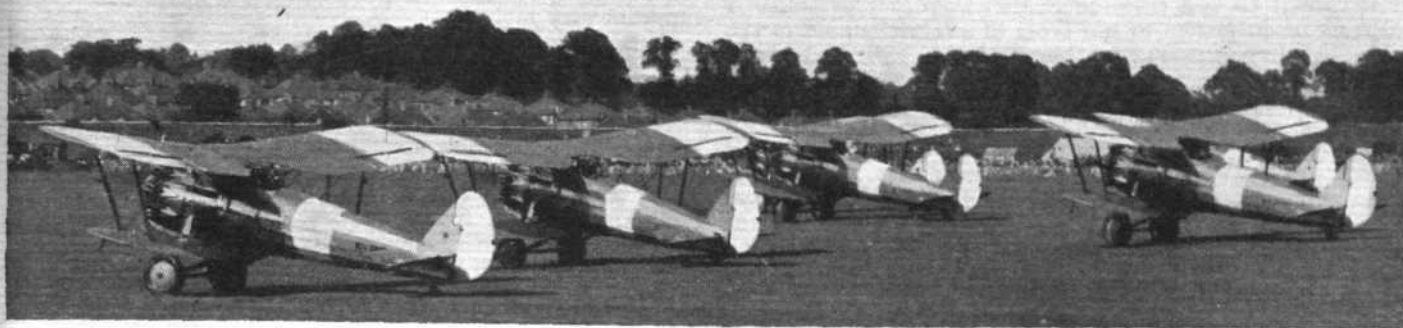
out in the Army manoeuvres next autumn, when each of the five Army squadrons in the country will be supplied with one C.30.

### Parachute Demonstration

Although we had noticed the Vickers "Virginias" get away in readiness for the parachute demonstration—the parachutists standing on their wing platforms—we were so engrossed in the antics of the Autogiro in the Co-Optimists turn that the actual "drop" took us unawares. Usually, the "Virginias" pass over the aerodrome once before the drop is made, so this time, when we saw the large machines approaching we did not expect that anything would happen at first—and when we looked again, we saw, the parachutes had dropped!

In this demonstration, the parachutists stand on the wings of the aircraft, and, at a given signal, pull the parachute release. The parachutes, in opening, pull the parachutists off the aircraft, and the descent is made. At the Displays, in the event of a strong wind, a certain amount of risk accompanies the "landing" of the parachutists, and so dummies are substituted. On this occasion we were unable to decide whether the Irvin parachutes carried "live" cargoes or dummies—if the latter, they were certainly most realistic. The alightings occurring below a dip in the aerodrome, we were unable





**THE DEFENDERS:** No. 54 (Fighter) Squadron Bristol "Bulldog II.A" ("Jupiter VII.FP."), well disguised, take off to defend the Magazine against attack. (FLIGHT Photo.)

to see if the "dummies" got up and walked away or not! However, all the Irvins functioned perfectly, the drops being made from only a few hundred feet.

### Flying Boats

A stately procession next passed overhead—the flying boats from the coast. No less than eight took part in it, and all were of the latest design. The Supermarine "Scapa" (2 "Kestrels") which led is to be supplied to some squadron before long, and the Short "Singapore II" (4 "Kestrels") has likewise been selected as standard equipment. No. 209 (F.B.) Squadron has only recently received the Blackburn "Perth" (3 "Buzzards"), whose quick-firing gun was prominent in the nose. The Short monoplane, R.24/31, with two steam-cooled Rolls-Royce "Goshawk" engines, is a very recent production, and the Saro R.24/31 (2 "Pegasus") is also new, and a very workmanlike looking job. The procession ended with three Saro "Clouds" (2 Siddeley "Serals") in formation. These amphibian monoplanes are training machines. One of them lowered its wheels and landed on the aerodrome, thereby greatly impressing the crowd.

### Air Skittles

This was a new and highly original event, in which four "Virginias" from No. 9 (Bomber) Squadron (pilots, Flt. Lt. C. R. Strudwick, F/O. J. B. Altham, P/Sgts. Byrne and Irish) took part. A number of huge yellow and red "skittles" were erected in the centre of the aerodrome, and when all was ready the "Virginias" came along in single file, low down, and as they passed over the "skittles" threw their "skittle-balls"—singly at first and later in pairs. The "skittle-balls" were practice smoke bombs, which could clearly be seen falling.

The players made some very good shots, the first throw accounting for two "skittles," but some went a little wide of the mark. One thing puzzled us somewhat—when one of the "skittle-balls" burst on the ground, reasonably near a "skittle," the latter remained standing, but another, at the other end of the line, promptly lay flat! Towards the end of the game a player scored a direct hit. A highly amusing and original event this.

### Low Flying Attack

The present writer once heard a naval officer who had witnessed air attacks on a moored ship say that what most impressed him was the attack of the fighters to clear the decks. No. 17 (F) Squadron gave an excellent specimen of this attack at the Display, but unfortunately for some spectators another squadron was lined up on the aerodrome between the boxes and the target and rather spoilt the view. At the R.A.F. Display these things are usually managed better. Nothing is more bewildering to watch than the fighters diving in turn at the target, the dive of each "Bulldog" covering the zoom of the previous attacker. The target presumably has machine guns, but the gunners would not know where to look for the next attack. The fighters have worked the whole thing out with the greatest care, and the skill with which they avoided collisions was also a thing to admire. Plunging fire from the air would not cause such heavy casualties as grazing fire from the ground, but this sort of attack must be highly upsetting to the nerves. No. 17 F.S. deserve the greatest credit.

### Gentlemen, You May Smoke!

Evolutions by aircraft emitting coloured smoke has always been a popular event, and this year it was, we think, more attractive than ever, for whereas on previous occasions three machines took part, this time five pilots of No. 19 (Fighter) Squadron (Flt. Lt. H. Broadhurst, F/O. S. F. Godden, and P/Sgts. R. Parr, W. J. Rye and J. Bignal) carried out the various evolutions, on Bristol "Bulldogs" ("Jupiter").

First they came along abreast, emitting (per Maj. J. C. Savage's "Sky-writing" apparatus) trails of orange, white, green, orange and white smoke, shooting up in a half loop and spreading out at the top in various directions. Then three machines spiralled downwards, interweaving a trail of white, green, and orange.

Next, all five painted a "True-Lover's Knot" in the sky—which, we regret to say, very quickly untied itself, helped by the strong breeze. An orange-green-white loop of gigantic size was next produced by the triplets, after which the "big five," flying abreast, made a string of three loops. Their final pattern was, as far as we could make out, a representation of an octopus (minus three tentacles!).

### Tied Squadron Aerobatics

No. 25 (Fighter) Squadron is an old favourite at Hendon, and this year the "Furies" from Hawkinge were chosen to provide the *pièce de resistance* of the afternoon. We had seen the three machines in a flight looped together in previous years, but never before have we seen the whole nine machines of a squadron so linked. This was what No. 25 F.S. had to show us. They did complete turns first in "squadron line abreast" and then in "squadron V," ending with a squadron loop. Then the three flights broke apart, though in each flight all three machines were still linked together. The flights now had more scope, and they dazzled the eyes with the wonderful things which they did. Flight rolls and cartwheels seemed easy to them, while flight loops were like silver in the days of King Solomon—nothing accounted of. Finally the three flights formed up and the show ended by the leading flight doing a half loop and a half roll, while each of the other flights cartwheeled outwards. The acme of wonderful flying seems to have been reached, but no doubt next year we shall see something still more marvellous. Incidentally an article on No. 25 (Fighter) Squadron was published in FLIGHT of December 8, 1932.

### Inverted Flying

It is the boast of the Central Flying School that when a new man goes there for instruction he must say to himself "I thought I knew something about flying, but I find that I did not." To the crowds at Hendon the impression must have got about that the C.F.S. instructors spend most of their time upside down. Three of them flew over the aerodrome in Avro "Tutors" ("Lynx") and promptly rolled over on to their backs. In that position they circled round and round the aerodrome, changing formation at intervals. Just occasionally they turned right way up for a short time, like a seal coming to the surface for a breath of air, but very promptly they went over again. Everyone seemed astonished that they did not land upside down.

### First Public Appearance

It cannot be said that the R.A.F. Display programme is such as to do justice to the types of aircraft housed in the new aircraft park. The machines, 16 this year, taxi out of the park, take off and fly past the enclosures in numerical order. There is no opportunity to show the particular merits of any one type, and the most the spectator can hope for is a glimpse of a few of the machines as they hurtle (or loiter) past. It is difficult to see how, in the time available, the event could be made more attractive. The machine park, none the less, attracted a lot of attention throughout the day, and crowds hung round it long after the Display was over. On Saturday last it would appear that an attempt had been made to compromise by sending the fast machines off first, and letting them fly past the enclosures twice, while the less spectacular types had to be content with the back of the stage, so to speak. The Hawker Modified High-speed "Fury," and the day and night fighters fitted with the same type of engine, were certainly impressive in their speeds and climbs, and the Bristol "Bulldog IV" with the new "Perseus" sleeve valve engine seemed particularly good on climb.

Of the other new types, one had hoped to see something of the effect of the trailing edge flaps fitted on the Westland General Purpose monoplane, but the start and landing were carried out in conditions which did not enable the action of the flaps to be observed at all closely, and an expression of opinion must be deferred to another occasion.

The Boulton & Paul "Overstrand" was called in to take part in an event earlier in the day. The new rotating gun turret in the nose of the fuselage is extremely ingenious, and while the machine was in the aircraft park this feature was demonstrated repeatedly. The turret can rotate through the full 360 degrees, and at the same time the gun can be trained to fire anywhere from straight up to straight down. It is rather intriguing to see the gunner rotate the turret until he is facing aft and looking into the fuselage, with his gun trained upwards and back to fire over the top centre-section. It seems quite probable that this type of gun turret will start a new "school," and that it may have important effects on air tactics.

The new General Purpose types were treated in rather stepmotherly fashion. From the very nature of the specification to which they have been designed, they lack the snap and verve of the fighters, and their performance is not nearly so spectacular. But they might have been given a bit more of the "limelight." There is probably no specification more difficult to meet than that for "G.P." types, with the mass of equipment that has to be carried, and the insistence, in spite of that, on quite a respectable speed and long range.

Among what the official programme called "Experi-

mental" types was the Hawker "Hart" fitted with the new Napier "Dagger" engine. The speed of this machine appears very high.

### The Set Piece

Unknown to Geneva, and while the foregoing events were taking place, an imposing building on the far side of the aerodrome was a busy hive of industry—producing and storing high explosives. It was, in fact, a magazine (not the good kind you read, like *FLIGHT*, but that in which gunpowder, shells, and stalcite and such like high explosives are kept). Suddenly it became "hivier" than ever—syrens blew, anti-aircraft guns were manned, a balloon apron went up (one balloon was seen), and a squadron of fighter aeroplanes took off. The reason was soon apparent, for squadrons of enemy bombers could be seen approaching, to attack the magazine.

They were soon overhead, with anti-aircraft shells bursting all around, and the light bombers ("Gordons" of No. 207 and "Wallaces" of No. 504 (County of Nottingham) dived on to their objective, a salvo of bombs causing some damage. The heavy bombers ("Heyfords" of No. 99) followed this up with slightly severer punishment, while an attack on the balloon resulted in the latter being brought down in flames (Maj. Sandbags, who usually makes his escape on these occasions, had to take his holidays earlier this year, so was not present).

Meanwhile the defending fighters ("Bulldogs" of No. 54) were worrying the attackers, and casualties occurred on both sides—including one of the heavy bombers. Again the bombers came over, this time causing considerable damage, the heavy bombers finally blowing up the complete volume of the magazine. All the while, an Army Co-operation machine (an "Audax" of No. 13) was cruising around, probably taking movie-tone films of the attack for record purposes.

And so home, with face and neck scorched and burning—from the sun, which attended the display from start to finish.

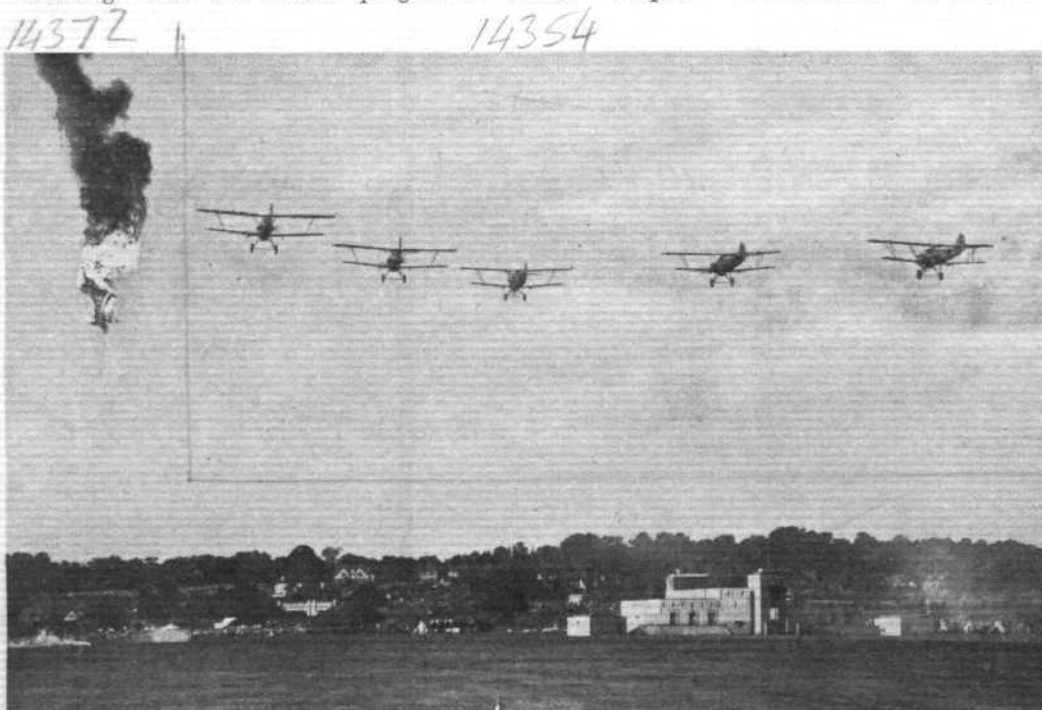
### The Static Exhibition

Last year the exhibition of service equipment in one of the hangars proved so popular that it was decided to enlarge it this year. This exhibition afforded probably the best six-pennyworth of aeronautical education ever offered to the public. The centre of attraction was the stripped fuselage of a "Hart" day bomber with all its military equipment mounted. Points of interest were courteously explained. Bombs and bomb racks, a sectioned torpedo, and a variety of aircraft guns were there for close inspection, and no less interesting was an array of navigational instruments. In fact, nearly every gadget connected with

Service flying was on show. Farnborough exhibited a small "spinning tunnel," in which tiny models of well-known aeroplanes spin on a jet of air, and large scale wind tunnel models of such modern aircraft as the Blackburn fighter, A.W. 19, Gloster T.S.K. and Short R.24/31 flying boat.

Some of the firms who were exhibiting at the S.B.A.C. Display on the following Monday showed actual examples of models of their more important products. The sectioned radial engines, as always, proved most popular.

Outside the hangar the Territorial Army held an exhibition of anti-aircraft guns, searchlights, and sound-locators. None of the equipment was of the latest pattern.



THE ATTACK: A low-down "strafe" upon the Magazine by No. 13 (Army Co-operation) Squadron, while the balloon, forming part of the "apron," is brought down in flames. (FLIGHT Photo)



# PRIVATE FLYING

A SECTION FOR OWNER-PILOTS  
AND CLUB MEMBERS

THE Editor has entrusted me with the pleasant duty of writing these weekly notes on the subject of private flying.

That section of aviation affecting the interests of flying club members and private aircraft owners and pilots is assuming greater importance as air transport develops. The fact that aviation can be divided into distinct categories is an indication that it is beginning to take its rightful place in the life of the community.

The history of flying has comprised sharply contrasted periods of development. The early progress of aviation from 1903 to 1914 may be said to have been almost entirely the result of private enterprise, and the first experimenters were mainly amateurs. The greatest of all private flyers, of course, were the Wright Brothers, who, carrying on their experiments without outside assistance, succeeded in December, 1903, in making the first flights in a free and controlled heavier-than-air power-driven machine. The years before the War saw the further triumphs of individual designers and self-taught pilots, with the result that sufficient progress had been made by the commencement of hostilities to justify the use of the aeroplane for military purposes. The War provided a great contrast with the period immediately preceding it in the utilisation of aircraft. The happy days of the flying enthusiast were for four long years suspended. There was during that time only one category of flying.

## The War and Aviation

It is a matter of controversy as to whether the War period really contributed to the general development of aviation. Those who contend that greater progress in civil aviation would have been made if the War had not intervened, can, with a good deal of reason, point to the apparent rather than the real development in the twenty years since 1914 as compared with the progress made in the decade prior to the commencement of hostilities. From the private flying point of view there is undoubtedly a good deal to be said for this argument. If flying is to appeal to those who now look upon their car as a necessity, aircraft must be produced with certain of the characteristics which were more common in the machines in use before 1914.

The exigencies of war caused designers to concentrate on one general type of aircraft with a view to the achievement of the highest possible speed and the greatest manoeuvrability, with little regard to other qualities. In the pursuit of this aim intensive research in aero-engine design resulted in increasingly efficient and powerful power units. Post-war production of civil and commercial aircraft has been largely influenced by the experience gained during this

abnormal period, and the majority of machines intended for air transport and private flying have tended to embody the features required in their military prototypes rather than the essential requirements of private and commercial flying. Prior to the War many promising designs of unconventional aircraft had been produced which, had they been followed up by continuity of research and experiment, might have been expected to result in more advanced types than those in use to-day. Machines of the Weiss and Dunne type might well have received more encouragement and consideration.

José Weiss, whose early experiments were assisted by Mr. Gordon England, was a genius whose work has not been sufficiently appreciated. He was typical of the amateur enthusiast of the time. By profession an artist of no mean merit, he would return to his painting when funds ran out, and by the sale of his pictures provide the necessary money to continue his flying experiments.

The days before the War are full of happy recollections for many of those who are prominent in aviation to-day.

The pre-War schools of flying at Brooklands, Eastchurch, Hendon, and Amesbury were composed of men whose heart was in the cause of aviation. Pilots such as McLean, Rolls, A. V. Roe, Moore-Brabazon, Grahame White, Gilmour, Howard Pixton, Radley, Moorhouse, Blackburn, and a host of others carried on the good work. A reference to two names, as closely associated in those early days as they are in present-day design and construction, will serve to show the happy relationship existing between these pioneers. When T. O. M. Sopwith in 1910 determined to win the De Forest Prize for the longest flight from England to the Continent, he proposed to use a Howard Wright biplane with an E.N.V. engine. This engine had never run satisfactorily for more than ten or twelve minutes, and it seemed a sorry prospect to embark on a long flight preceded by a sea crossing. Mr. Sigrist, Mr. Sopwith's friend and collaborator, then as now, came to the rescue, and, such was his skill and powers of persuasion, that Sopwith was able to achieve a flight of 177 miles in 3½ hours, and thus win the prize.

## Private Flying Then and Now

Those were times of friendly co-operation which many living to-day look back upon with pleasant memories. Of the early flying community at Brooklands, Lord Rayleigh remarked "It was a society like the early Christians; it practised fellowship and the community of goods." This was exemplified by the freedom with which one experimenter used the spares of another's machine. If a pioneer was not satisfied with his own propeller he borrowed another in the hope that he

## NOTES

By

LORD SEMPILL

A.F.C., F.R.Ae.S.

might find the performance of his own machine improved.

Those were great days for the private flier. It is the custom in some quarters to assume that private flying is a post-War development, and it may come as a surprise to many to learn that there were at least 250 privately-owned aircraft flying in this country during 1910-1912. There were few prepared landing places in that period, but these pioneers used their aeroplanes for cross-country journeys with little fear that they would not find a suitable field in which to alight. So controllable was the average machine that it was possible to land and get off in a space that would be entirely insufficient for a modern machine.

One great advantage enjoyed by the early experimenters was the absence of restrictive regulations. Beyond a decree that pilots should not fly over certain prohibited areas, no restrictions govern the design, construction, or flying of new or production types.

The existing regulations, which, many believe,

handicap design and construction considerably, and which hamper the economic supply of aircraft material, are a post-War imposition and are mainly based on the Air Navigation Act of 1920 and the Air Navigation Order of 1922. These enactments arose out of the International Convention of 1919, which, as the International Commission for Air Navigation, was established on a permanent basis under the League of Nations on July 11, 1922, and is popularly known as the I.C.A.N. Many of those who have the best interests of aviation, and particularly of private flying, at heart, have felt, in their indignation at the restrictive influence which this body exerts, that it would be more appropriately labelled I CANT. We shall have opportunities of returning to this subject later, for the future extension of private flying will depend largely on the more sympathetic attitude of those responsible for the regulations governing civil aviation, and these should be drafted to assist rather than impede the development of all forms of air transport.

## FROM THE CLUBS

### *Events and Activity at the Clubs and Schools*

#### LEICESTERSHIRE

Ninety-two hours were put in during June at Desford, with 56 cross-country flights, during which fourteen aerodromes were visited. Two new members have joined.

#### SOUTHEND

An Avro "Cadet" has been added to the fleet. Mr. Donald Rankin flew to Scotland, with Mrs. Rankin, for a short holiday.

#### CARDIFF

Several cross-country flights were made by members, including one by Mr. and Mrs. Nicol in their British Klemm, who flew non-stop from Edinburgh to Cardiff in 4 hr. 20 min.

#### NORTHAMPTONSHIRE

In spite of adverse weather conditions, the flying time at Sywell has maintained a good average. Mrs. M. E. Danson has now obtained her "A" licence, and Messrs. C. F. Westley and R. C. Stewart have also passed their tests. On June 23 the Northamptonshire Aero Club team, consisting of Messrs. T. Rose, G. Linnell and K. Whittome, were successful in winning the Inter-Club Relay race at the Lancashire Aero Club's Display.

#### SCOTTISH

On Sunday, June 17, the Club received a visit from No. 606 (B.) Squadron, A.A.F., under the command of the Marquis of Douglas and Clydesdale, who were accompanied by Lord and Lady Londonderry.

#### YORKSHIRE

A flying scholarship has been awarded to Mr. W. K. Paul, a member of the Yorkshire Aeroplane Club. Thirty hours were flown in the week ending June 25, including flights to Scarborough, London and Norwich.

#### HAMPSHIRE

Two members, Messrs. V. R. Husband and G. Lush, made first solos, and the latter also passed the tests for his licence at Southampton last week, where a total of 47 hr. 45 min. was flown by the Hampshire Aeroplane Club.

#### ELY

All visiting pilots will be cordially welcomed at the opening Garden Party of the Ely Aero Club on July 7, and there will be some interesting events for them, including an arrival competition between 2.30 and 3 p.m.

#### BRISTOL AND WESSEX

Five entries have already been received for the S.B.A.C. Challenge Trophy race, which is open to private owners who have been trained by a club as well as to club entries. In spite of high winds, a total of 35 hr. 50 min. was flown at Whitchurch, with one "A" licence by Mr. B. S. Baker.

#### CAMBRIDGE

High winds have prevailed most of the week, and this, coupled with the fact that the May Term has ended at Cambridge, has caused a reduction in flying hours at Marshall's school.

Three air taxi trips were made, including a very urgent one with Mrs. Beatty, wife of Maj. Beatty, the trainer, from Newmarket to Sandown. Mrs. Beatty rang up for a machine at 1.20 p.m. on Friday to pick her up at Newmarket and to get her to Sandown for the 2.30 race. The trip was completed successfully with only a few seconds to spare.



AT HESTON : Visitors flocked by air to see the R.A.F. Display. Above are seen, on the left, Herr Boehner, Herr von Winterfeld, and Dr. Wegenast (President of the Dusseldorf A.C.) and on the right, Fraulein Elly Beinhorn and passenger.



## READING

Mr. Gwynne Johns, who is a member of the Reading Aero Club, made a delayed parachute drop from 12,000 ft. last week over Salisbury Plain. Apart from the fact that he landed in a large tree, in which he remained for the best part of an hour, he described the drop as "uneventful."

Two "Puss Moths" and a "Dragon" from Norman Edgar (Western Airways), Ltd., arrived early on Sunday morning with a party of twelve golfers from Cardiff, who played at a local club and returned in the evening.

## BROOKLANDS

The weather has been bad this week and the flying times have dropped accordingly. However, 70 hr. 45 min. were flown, and Messrs. Dansie, Bailey and Valetta completed their "A" licence tests.

Capt. G. E. Eyston, the winner of the B.R.D.C. British Empire Trophy race, has joined the Club, bought a "Bluebird," and is under instruction with Mr. Mackenzie.

## HATFIELD

In spite of the indifferent weather and high winds on Friday, the flying at the London Aeroplane Club amounted to 77 hr. 20 min. during the week. New members are still pouring in, and Messrs. Francis, Cochrane, Shott and Woolcott passed their "A" tests.

The Auxiliary Squadrons were very busy all day on Friday practising for the Display.

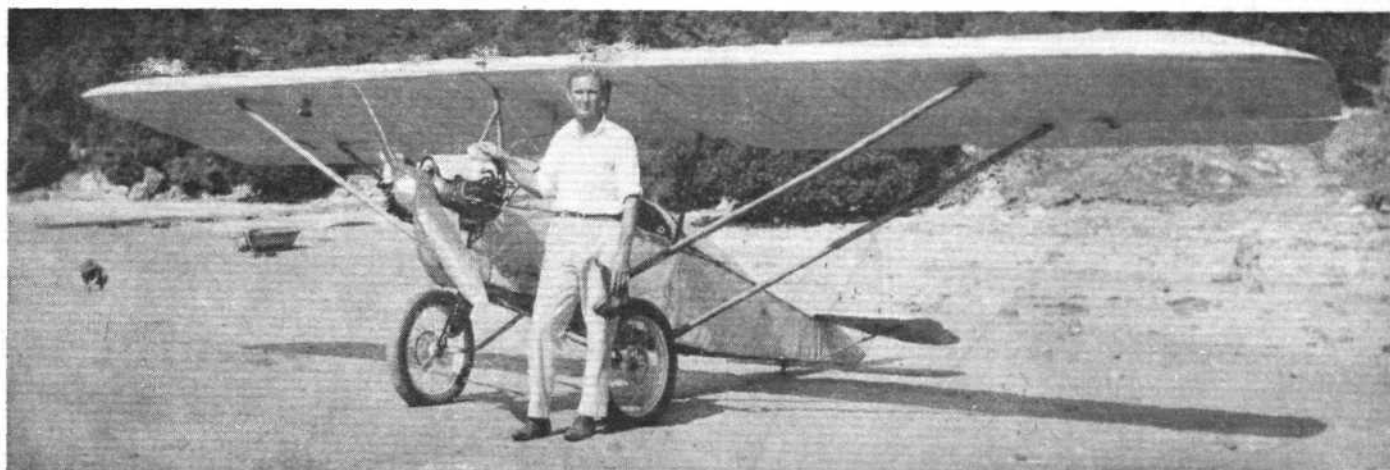
## NORFOLK AND NORWICH

The competition for the "Holmes" Trophy for cross-country flying was held last week-end, with six entries. A longer course was used this year, and the "field" finished, on time, under a "four-minute handkerchief." Curiously enough, Mr. Alan Colman, who won last year after a tie, tied again with Mr. A. J. S. Morris. Another course will be chosen for them at a later date. Marks were given for navigation and general flying, and a further bonus for a spot landing in a field on the course.

On Saturday, July 28, the Club is holding a Guest's Day, which will be followed by a dance in the evening.

## A HOME-MADE SINGLE-SEATER

*Details of an Interesting Little Machine Built by a South African Enthusiast*



SOUTH AFRICAN-BUILT: Mr. Lewis Noble, of South Africa, and his small parasol monoplane.

AS British aircraft constructors are, apparently, doubtful of the commercial possibilities of a light single-seater machine for sporting purposes, it is interesting to hear again that a young South African enthusiast has not only designed and built such a machine, but has flown it himself.

The name of this young enthusiast, who is only 19, is Mr. Lewis Noble, and the machine is a high-wing monoplane, powered by an A.B.C. "Scorpion" engine of 40 h.p. He built it entirely himself, and it would, perhaps, be best to describe the component parts in the order in which they were assembled.

The first part to be constructed was the fuselage, which consists of four longerons 1 in. by 1½ in. spruce, braced with diagonal 1 in. by 1½ in. struts, which are secured to the longerons by steel gussets and bolts. The whole is fabric covered. Next to be assembled was the tail unit. This is also of wood and covered with fabric. The size of the tail plane is 6 ft. by 1 ft., that of the elevator 6 ft. by 2 ft. 9 in., and of the rudder 3 ft. by 2 ft. The engine is well covered in and an oil tank of 1 gallon capacity lies immediately behind.

The centre section, which would be unnecessary but for a determination on the part of the designer to incorporate folding wings, was the next item to be constructed. This is attached to the fuselage by means of four streamlined steel tubes, each 2 ft. long, bolted at each end and braced with steel wire. Into the centre section is built a 10-gall. petrol tank.

The wings were the biggest job of all. They consist of two plain spars, 1 in. by 6½ in. by 12 ft. and 1 in. by 4 in. by 12 ft. respectively, with twelve ribs, each made up from eleven pieces of spruce, glued and nailed together

by plywood gussets. They are fitted to the centre section and braced to the lower longeron by four stout streamlined ash struts.

Steel ten-gauge tubing, 1¼ in. diameter, was used for the undercarriage, with two Baby Austin wheels, these being the lightest procurable in South Africa. The propeller was designed by Mr. Noble himself, and made out of laminated Stinkwood and White Elm, and the tail skid is built up in the usual way of a number of blades and fitted with a shoe. It was the designer's intention to build a machine inherently strong in every detail, so that it would stand up to any bumps and jars it might have to undergo while he was learning to fly it, and weight was not spared.

Mr. Noble commenced "instruction" by taxiing his little machine about, doing short hops across the ground, but very shortly afterwards he took her into the air and found her very easy to handle, though on one occasion he turned the machine on her back—luckily with very little damage. When he was entirely satisfied with his work, the designer got into touch with Mr. Victor Smith, of Cape record attempt fame, who flew the machine on a number of occasions and expressed his complete satisfaction. The following performance figures were worked out and checked:—

Ceiling .. .. .	10,000 ft.
Stalling speed .. .. .	20 m.p.h.
Maximum speed .. .. .	80 m.p.h.
Consumption .. .. .	40 ml. to a gall.
Weight (loaded) .. .. .	500 lb.
Wing loading .. .. .	3½ lb. per sq. ft.
Length of take off .. .. .	100 yd.
Length of landing .. .. .	75 yd.
Span .. .. .	26 ft. 6 in.
Sp. n (with folded wings) .. .. .	10 ft.
Length .. .. .	16 ft.

# THE S.B.A.C. DISPLAY

*More than 40 Aircraft were shown to some 1,500 guests of the Society of British Aircraft Constructors at Hendon on Monday last, in addition to the Engines, Materials, Accessories and Equipment on view in the "Static" Exhibition*

**F**ROM every point of view the third display and exhibition organised at Hendon by the S.B.A.C. on the Monday following the R.A.F. Display was a success. The weather was perfect, the variety of aircraft was large enough to convince the potential purchaser of the very wide range of British types available, and the stationary exhibits covered the field of power-plants, materials and equipment in a representative if somewhat limited manner. The organisation was excellent, and of the international character of the concourse one could not long remain ignorant if one mingled with the crowds which surrounded the machines on the aerodrome. If there is any criticism to be made it is that one day is barely enough for guests to see all that deserves to be seen, although many of the foreign visitors are usually pressed for time and have to return on the Tuesday morning.

From 10.30 to 12.30 there was a flying display of some of the aircraft exhibited. The luncheon interval occupied the time from the end of the flying to 2.30 p.m., and afterwards there was inspection of the machines on the aerodrome, followed by pas-

senger flights until 6.30 p.m. or, as one should say in B.B.C. 1934, 18.30.

In his speech of welcome at the luncheon, Mr. H. J. Thomas, of the Bristol Aeroplane Co., Ltd., Chairman of the S.B.A.C., mentioned that possibly the flying part of the display did not bring out to the full the importance which the British aircraft industry attaches to all matters connected with the development of civil aircraft and civil aviation. Mr. Thomas was, we imagine, thinking of the larger commercial aeroplanes, of which no representative was demonstrated. It is to be presumed that this was due to the fact that all our large British commercial machines are operated by Imperial Airways, and that no type could be spared for the purpose of demonstration at Hendon. The "feeder line" types and the smaller types suitable for the private owner covered that field adequately and helped to make up in no small measure for the fact that so far the British aircraft industry does not appear to have made any serious effort to open world markets for the large class of machine.

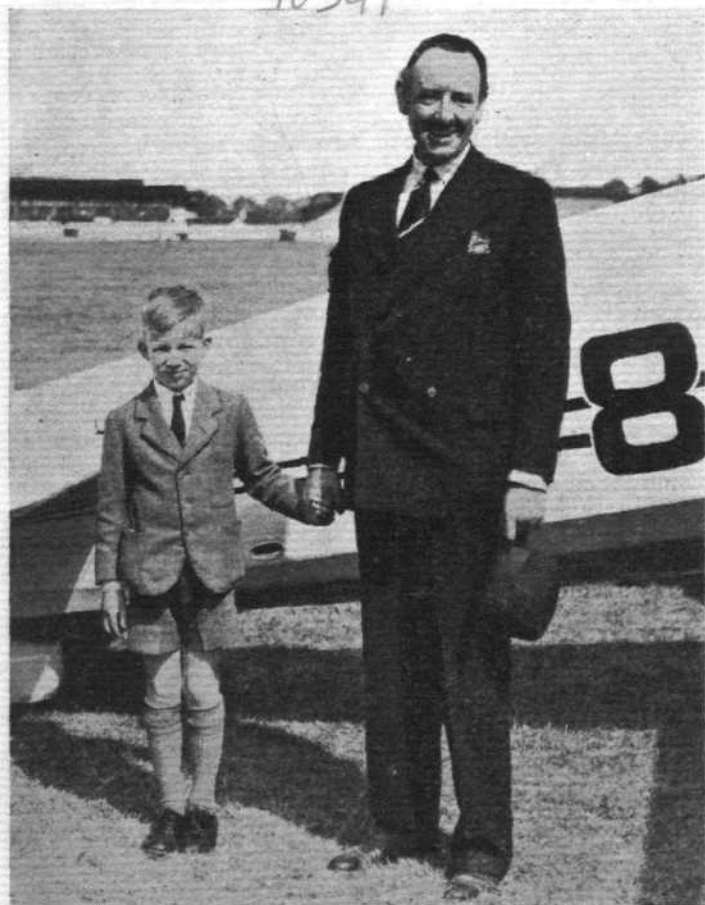
Another reason for the preponderance of military types was the holding, but two days previously, of the R.A.F. Display, at which several of the latest military aircraft had already appeared and were therefore on the spot. These, as well as some interesting new types not previously shown, naturally came in for close inspection by those foreign visitors who were looking around for types to equip their own air forces, and one formed the opinion that they were impressed by much of what they saw.

## THE "DYNAMIC" DISPLAY

Some 18 firms demonstrated aircraft in flight. Each firm was allowed from four to eight minutes in which to demonstrate its machines, according to the number, but the system was that if a constructor desired to show more than two types, he had to have them in the air together, as he was only allowed eight minutes. This arrangement gave rise, in one or two cases, to some formation flying, which actually provided a not unwelcome change from the demonstrations of single machines. The order in which constructors demonstrated their types had been decided by ballot, but it will be more convenient here to refer to the demonstrations and aircraft in alphabetical order.

**Airspeed, Limited.**—Two smaller commercial or "feeder line" aircraft represented this firm, a standard "Courier" six-seater monoplane fitted with Siddeley 275-h.p. "Cheetah" engine, and the new "Envoy" seven-seater monoplane, which has two Wolseley 185-h.p. A.R.9 engines. Both types have the patented Airspeed type of retracting undercarriage, the wheels being partly housed in the wing. The "Courier" with "Cheetah" engine has a cruising speed of 150 m.p.h., and the "Envoy" also cruises at about 150 m.p.h.

In the demonstrations at Hendon the "Courier" was flown first, the pilot being Mr. C. H. Bremridge. The "Envoy" was demonstrated by Mr. C. H. A. Colman. Both machines made a favourable impression by their speed and general handiness, and it was noticeable that the



THE CHAIRMAN: Mr. H. J. Thomas, of the Bristol Aeroplane Co., welcomed the guests at the official luncheon, first in English and then in French. He is seen here interrupted in the task of explaining to his young son some of the mysteries of the "Bulldog IV." (FLIGHT Photo.)





THE LATEST VERSION: General Aircraft Co.'s S.T.10 has two 90-h.p. Pobjoy "Niagara" engines. (FLIGHT Photo.)

"Envoy" is very quiet. The machine, by the way, has a normal range of about 400 miles at cruising speed.

**Armstrong-Whitworth.**—Of the two machines exhibited and demonstrated by Sir W. G. Armstrong-Whitworth Aircraft, Ltd., one, the A.W.19, had already been seen at the R.A.F. Display. This was the new "General Purpose" type, fitted with 700-h.p. Siddeley "Tiger" engine. A feature of the design is that the fuselage fills the gap between the wings, and the pilot is placed ahead of the top plane, where his view is very good.

The second aircraft shown by this firm was also a military type, the "Scimitar," a single-seater fighter fitted with the 640-h.p. Siddeley "Panther" engine. Brightly polished aluminium covering over a large portion of the fuselage made the name seem rather appropriate, and the general finish of this machine was much admired.

When it came to demonstrating the machines, the A.W.19 took off first, piloted by Mr. Campbell Orde. One did not expect sensational flying from a general purpose type, but to the surprise of everyone the machine was looped and rolled. It obviously handles well. Mr. Turner Hughes demonstrated the "Scimitar," and it was considered by many of those present that his flying was the most impressive seen during the series of displays. His steep climbs, with the machine almost vertical, were spectacular, but what particularly pleased the discriminating onlookers was the series of short and sharp S-turns, if they could be called turns. Flying at high speed, the pilot would do a vertical bank to one side, followed immediately by a vertical bank to the other. The lateral control of this machine must be extremely good. The same sort of manoeuvres were repeated with the machine flying quite slowly.

**Blackburn.**—The Blackburn Aeroplane & Motor Co., Ltd., had originally intended to be represented by their T.S.R. machine, but as this was required by the Air Ministry, the machine was not available. The new Day and Night Fighter was expected to take its place, but could not be got ready in time at short notice, and the Blackburn company had to be content with showing four B.2 train-

ing machines, small side-by-side two-seaters, variously fitted with "Gipsy III," "Gipsy Major," and "Hermes IV" engines. One of the four machines was a new type of trainer, fitted with blind-flying hood, camera gun and dummy P.7 camera.

In the flying demonstration three of the B.2 machines, all painted light blue, took off together in formation, a fourth following a little later. While the formation flew around the aerodrome, the single machine did rolls, loops and inverted flying. Altogether they gave a very interesting and convincing show.

**Bristol.**—A single machine represented the Bristol Aeroplane Co., Ltd. This was the "Bulldog IV," which had taken part in the fly-past at the R.A.F. Display. The machine looks well in its cream and black paint, and the fact that it is fitted with the Bristol "Perseus" 600-h.p. sleeve-valve engine lent added interest. It is claimed that the maximum speed of the machine is well in excess of 200 m.p.h., which must be regarded as very good for a machine of the Day and Night Fighter class.

Flt. Lt. C. F. Uwins demonstrated the "Bulldog IV" by a series of dives and vertical "zooms," the machine handling very smoothly. The engine emitted, at certain speeds, a curiously ringing whistle, which seemed to be composed of several slightly different notes. This whistle is not, we are informed, due to the sleeve-valve engine as such, but to the air rushing through the small gaps between the tops of the cylinders and the engine cowling. The machine is the standard type except for the engine, but small modifications have been incorporated, including the fitting of a Dowty tail wheel.

**De Havilland.**—The De Havilland Aircraft Co., Ltd., was represented by a D.H. 86, a "Dragon," a "Leopard Moth" and a "Tiger Moth." The machines are already well known to readers of FLIGHT, and it will suffice if we recall that the D.H. 86 has been designed primarily to meet the requirements for machines to operate the Singapore-Australia air route. It is a biplane with very tapered wings, fitted with four "Gipsy Six" engines of 200 h.p. each. The cruising speed is between 145 m.p.h. and 150



AIRSPEED "ENVOY": This machine is fitted with two 185-h.p. Wolseley engines. (FLIGHT Photo.)

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FOR IMPERIAL AIRWAYS: The D.H. 86 *Delphinus*, with four "Gipsy Six" 200-h.p. engines. (FLIGHT Photo.)

m.p.h., and the machine will maintain height with two engines on one side stopped. The actual example exhibited was *Delphinus*, the first of the type to be delivered to Imperial Airways, Ltd.

Since it made its first appearance in 1932, the D.H. "Dragon" has been sold in large numbers. It might be described as an airliner in miniature, and is a biplane fitted with two "Gipsy Major" engines of 130 h.p. each. A cruising speed of 114 m.p.h. is maintained, and the range in still air is about 560 miles. The disposable load is 2,264 lb.

Designed specially for the private owner, the "Leopard Moth" is a high-wing monoplane three-seater, fitted with the 130-h.p. "Gipsy Major" engine. Cruising easily at 120 m.p.h., the machine has a normal range of 715 miles.

The "Tiger Moth" was designed for training purposes, and is a normal biplane with 130-h.p. "Gipsy Major" engine. It is of the open cockpit type, and can variously be fitted with wheel, float or ski undercarriages, according to the locality and climate in which it is intended to operate.

Of the machines exhibited, the de Havilland company chose to demonstrate the 86 and the "Dragon." Both impressed by their speed and quietness. The 86 in particular was quite "unhearable" once when it flew over at amazingly low speed.

**Fairey Aviation Co., Ltd.**—Three military types had been chosen to represent the Fairey company. They were: The Night Bomber monoplane (two Rolls-Royce 600-h.p. "Kestrel" engines), the new "General Purpose" machine

(700-h.p. Siddeley "Tiger"), and a "Seal" (600-h.p. "Panther").

The Fairey night bomber is a very large cantilever low-wing monoplane of more than 100-ft. span. Normally the machine carries a crew of four, and three gunners' positions are provided. The total weight is about  $8\frac{1}{2}$  tons.

Designed to meet Air Ministry specification G.4/31, the Fairey "General Purpose" biplane is an all-metal machine in which the fuselage has a pronounced "hump" in order to raise the pilot so that he can look forward over the engine. Interesting fittings on this machine were some flat "mudguards" projecting horizontally from the sides of the rear portion of the fuselage, near the top. One imagines that the object is to prevent the air from "spilling" over the top, thereby increasing the effectiveness of the rudder.

One of the more recent developments of the Fairey III F., the "Seal," is a three-seater biplane, equipped for use with the Fleet Air Arm, to which a number has been supplied. With normal tankage the still-air range is 650 miles.

Flt. Lt. Staniland demonstrated the night bomber in flight, and remarkably well he did it. In spite of its large size, he manoeuvred the machine as if its weight were a couple of tons instead of  $8\frac{1}{2}$  tons. His steeply-banked turns and S-turns were a joy to behold, and all the manoeuvres were carried out inside the limits of the aerodrome.

**General Aircraft, Ltd.**—Two machines were on view: an S.T.6 and the new S.T.10. The latter machine is a ver-



THE "SCIMITAR": A single-seater fighter of the Armstrong-Whitworth range. The engine is a 640-h.p. Siddeley "Panther." (FLIGHT Photo.)





**EFFICIENCY :** With two Pobjoy "Niagara" engines of 90 h.p. each, the Short "Scion" carries pilot and five passengers at a cruising speed of 100 m.p.h. (FLIGHT Photo.)

sion of the original S.T.4, so modified that it can be supplied either with fixed or with retractable undercarriage. Improvements have been made in the interior arrangement of the cabin, and other changes have resulted in general improvement all around. The machine is fitted with two Pobjoy "Niagara" engines of 90 h.p. each, and, of course, has the Stieger Monospar wing structure.

Flt. Lt. Schofield demonstrated the S.T.10, his manoeuvres including long sustained climbs, loops, slow flying and fast flying. The new machine certainly handled well, and was noticeably quiet.

**The Gloster Aircraft Co., Ltd.**—The "Gauntlet" day and night fighter is the latest type to be ordered for the R.A.F. It is a two-bay biplane fitted with the Bristol "Mercury" engine of 600-645 h.p. At a height of 15,800 ft. the maximum speed reaches the very high figure of 228 m.p.h. and a height of 20,000 ft. is reached in 9 minutes. The service ceiling is 35,500 ft.

At the S.B.A.C. Display the "Gauntlet" was flown by Mr. Sayer, one of Hawker's test pilots, who put up a very excellent demonstration, the "zooms," vertical climbs, vertical rolls and tight turns showing up the performance and manoeuvrability very well indeed. The slow rolls in particular were impressive, and the slow-flying ability surprising.

**Handley Page, Ltd.**—A single machine represented this firm, the new "Heyford" Mark II night bomber, fitted with two Rolls-Royce "Kestrel" engines of 600 h.p. each. The machine differs from the original "Heyford" mainly in that the engine nacelles have been redesigned, and that there is a transparent roof over the pilot's cockpit. A

good deal of weight has also been saved on the structure. Capt. Cordes demonstrated the "Heyford," and as all three guns were manned one got a very good idea of the remarkable way in which all "blind spots" are covered in this machine. As usual, the "dustbin" gun turret under the fuselage caused some amusement.

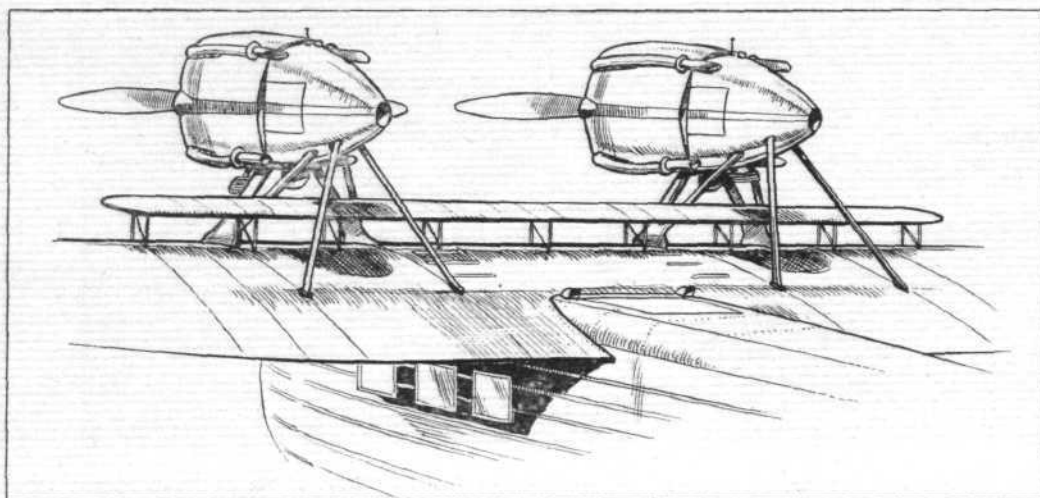
**Hawker Aircraft, Ltd.**—The three Hawker types shown were the "Fury" Mark II and the well-known "Hart" MR, both with 600-h.p. Rolls-Royce "Kestrel" engines, and a "Hart" fitted with Bristol 700-750-h.p. "Pegasus" engine. The "Fury" single-seater fighter has a maximum speed of approximately 240 m.p.h., while "MR" does better than 200 m.p.h., although it is a General Purpose type. The "Pegasus-Hart" is a day bomber with a top speed of about 200 m.p.h.

All three machines were demonstrated, being flown by Messrs. Bulman, Sayer and Lucas respectively. They took off one after another, and after a while they performed their evolutions in the same order in which they took off, the "Fury" leading, followed by "MR," and the "Pegasus-Hart" coming last. First came a power dive, followed by a vertical climb, then another dive and climb ending in a loop, and finally a dive and "zoom" ending in an upward roll. The machines then formed up in formation, broke up again in a "Prince of Wales' Feathers," and landed.

**D. Napier & Sons.**—At this year's S.B.A.C. Display an innovation was that an engine firm was actually responsible for the exhibition and demonstration of aircraft. Napier presented the Airspeed "Courier" with Napier-Halford "Rapiet" and the Hawker "Hart" with Napier-



**FROM THE "STATIC" EXHIBITION :** The Blackburn-Duncanson single-spar wing. The spar is a built-up metal tube, and also serves as a petrol tank. (FLIGHT Photo.)



**SMOOTHING OUT THE AIR-FLOW:** A small auxiliary aerofoil is fitted above the wing of the Saro "Rapier-Cloud," with marked improvement in the effectiveness of the controls.

Halford "Dagger" engine. The machines are standard types, differing in the engine installations only. Reference has already been made to the Airspeed "Courier" above, and it will suffice if we say that the "Courier" was piloted by Mr. C. H. A. Colman, while the "Dagger-Hart" was flown by Mr. Rex Stocken, who has had a great deal to do with the flight-testing of this engine. In the "Courier" demonstration the ease and rapidity with which the undercarriage can be raised and lowered was well demonstrated, and the machine certainly seems very fast when fitted with this engine. Actual performance figures are not available.

Mr. Rex Stocken followed on the "Dagger-Hart," and his demonstrations included power dives and steep climbs. Again the machine seemed remarkably fast, but in the absence of actual performance figures it is impossible to estimate by how much the speed differs from that of the standard machine.

**Percival Aircraft Co.**—Mr. E. W. Percival had hoped to have two machines at the Display, his new "Gull" with improved door arrangements and undercarriage, and the "Mew Gull" entered by H.R.H. Prince George for the King's Cup Race. At the present time the "Mew Gull" is having a "Gipsy VI" engine fitted, and could not be got ready in time for the Display. Mr. Percival, therefore, had to content himself with demonstrating the "Gull" fitted with "Gipsy VI." The machine appeared to handle remarkably well, and did several sustained climbing turns, and S-turns while climbing. The new undercarriage appears to be a considerable improvement on the old type, and altogether the latest "Gull" should appeal to many potential purchasers. With the "Gipsy VI" engine, a maximum speed of 166 m.p.h. is claimed, and the cruising speed is about 155 m.p.h. The range is approximately 500 miles, but with larger tanks this can be increased to 640 miles.

**A. V. Roe & Co., Ltd.**—A very comprehensive range of Avro machines was shown, including the 642 belonging to Midland & Scottish Air Ferries, Ltd., the Avro "Com-

modore" bought by Mr. Walter Westhead, a "Cadet" from A. S. T., Ltd., and the 626 Trainer. It had been hoped to exhibit the first of the Autogiros now being built in the Avro Works at Manchester, but the machine could not be got ready in time, and Mr. Brie's well-known demonstration machine A.C.I.N. took its place.

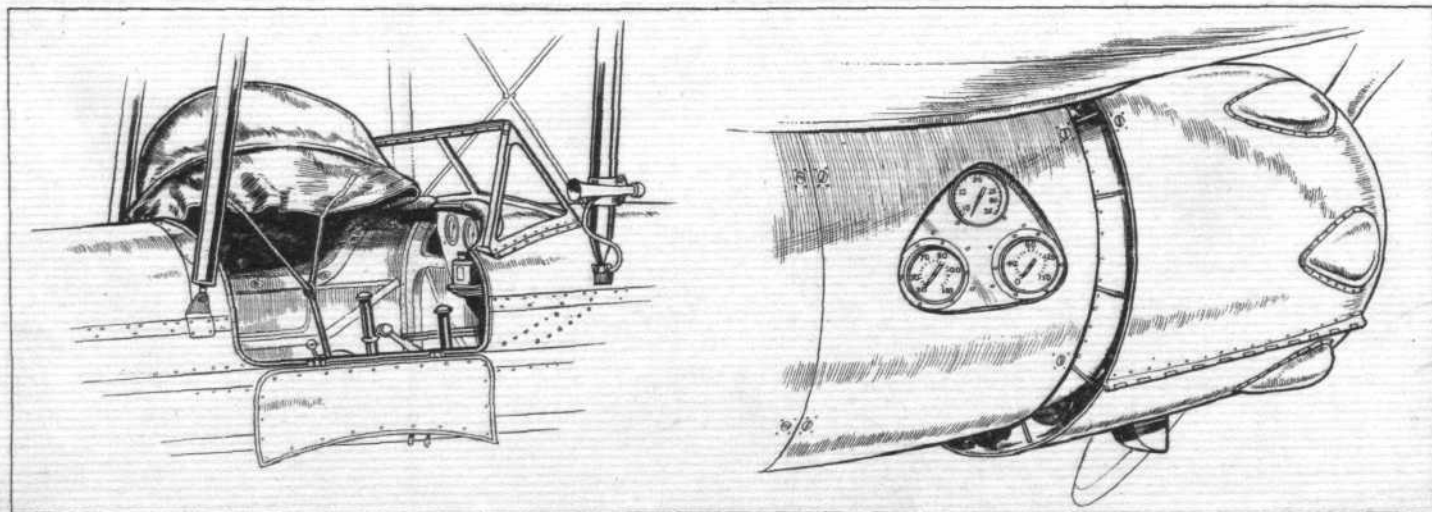
The Avro 642, when equipped with two 460-h.p. Siddeley "Jaguar" engines, is a very economical airliner, carrying a crew of two and 16 passengers. It is estimated that the inclusive cost of operating this machine is 1d. per passenger per mile. The cruising speed is 135 m.p.h., and the maximum speed 160 m.p.h. With the full complement of passengers the range is 350 miles.

As the Avro "Commodore" (215-h.p. Siddeley "Lynx") was described recently in *FLIGHT*, it will suffice to place on record that since we saw it the machine has been completely finished, and now provides the comfort of a high-class motor car, while the external paint work has an extremely high finish. When carrying four or five occupants the "Commodore" carries enough fuel and oil for 4½ hours' flying at a cruising speed of 110 m.p.h.

The "Cadet" trainer biplane is of the normal open-cockpit two-seater type, and has a 140-h.p. 7-cylinder "Genet Major" engine. The machine is very popular for school work, and is remarkable for the smoothness and effectiveness of its controls.

Similar in general appearance to the well-known Avro "Tutor," the type 626 is a training biplane with 275-h.p. Siddeley "Cheetah" engine. The equipment, etc., is so ingeniously arranged that the machine can be used for the instruction of pilots and gunners in every branch of military flying duties.

The Autogiro, with 140-h.p. "Genet Major" engine, is already very well known to readers of *FLIGHT*, but it is of interest to recall that A. V. Roe & Co. have now begun quantity production, and orders have already been placed for nearly 100 machines. Ten of these aircraft are to be added to the equipment of Army Co-operation Squadrons of the R.A.F. The maximum speed is 115 m.p.h. and the



**FOR BLIND FLYING:** The hood over the pupil's cockpit in the Blackburn B.6. On the right, the rev. counter, oil-temperature and oil-pressure gauges, as seen from the cabin of the Short "Scion."



minimum level speed 15 m.p.h. The machine carries pilot and one passenger.

In the flying display, the "Cadet" was demonstrated by Flt. Lt. Veal, of Air Service Training, Ltd., whose demonstrations included loops and half-loops, upside-down circling flight, and many other evolutions very neatly carried out. The Autogiro was demonstrated by Mr. Brie, of the Cierva Autogiro Co., whose performance was, as usual, very "finished" and very convincing. He stopped his engine completely and ended with a perfectly-judged glide in which he landed right by the side of the dispatch officers, not running more than about 6 ft. after touching.

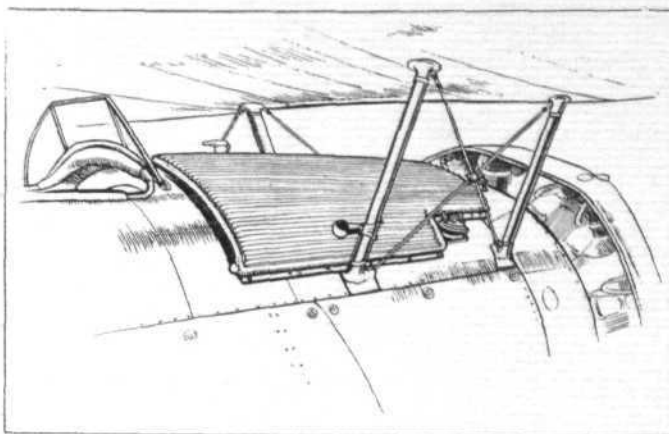
**Saunders-Roe, Ltd.**—Two "Clouds" had been chosen to represent Saunders-Roe, Ltd., one being fitted with two 340-h.p. Siddeley "Serval" engines. In its standard form this machine was the first amphibian to be ordered in quantity by the Air Ministry. It has accommodation for six or eight occupants, and carries extremely full navigation equipment. The particular specimen exhibited was fitted with a Stieger monospar wing for the purpose of testing this type of wing construction against the machine fitted with the standard wooden wing.

When the "Cloud" is fitted with two 340-h.p. Napier "Rapier" engines, it has, when operated as a flying boat, a cruising speed of 112 m.p.h., and a maximum speed of 131 m.p.h. If the amphibian undercarriage is fitted, the cruising speed is 102 m.p.h., and the maximum speed 121 m.p.h.

The "Rapier"-engined version was the one chosen for the flying demonstration. The engines sounded remarkably well, and although nothing spectacular was attempted, the machine inspired confidence by its great steadiness in the air. An interesting feature is the auxiliary aerofoil placed a few inches above the main wing. The purpose of this is to steady the air flow, and we gather that the effectiveness of the controls is considerably increased by the fitting of this aerofoil.

**Short Bros., Ltd.**—This very old firm of seaplane constructors was represented at the S.B.A.C. Display by the first production model of the small "Scion" light transport monoplane. The machine was barely finished, having had to be rushed through in time for the Display, but it is scarcely necessary to make allowances for an aeroplane which, with two engines of but 90 h.p. each (Pobjoy "Niagara"), carries pilot and five passengers at a normal cruising speed of about 100 m.p.h., and with a fuel range of about 370 miles. The "Scion" was flown by Mr. Lankester Parker, and, apart from its other qualities, the flight also brought out the quite remarkable quietness of the engines, which at times could barely be heard.

**Spartan Aircraft, Ltd.**—A "Cruiser" fitted with three 130-h.p. "Gipsy Major" engines was shown and demonstrated. This was a standard machine, with accommodation for pilot and six passengers. A feature of this aircraft is that it will maintain level flight on any two engines up to a height of 6,000 ft. while carrying full load. Hurried forced landings are therefore almost ruled out. The machine cruises at about 120 m.p.h. The demonstration flight brought out both the speed and the ability to fly on two engines.



ON THE GLOSTER "GAUNTLET": The oil cooler on top of the fuselage deck.

**Vickers, Ltd.**—In addition to the two machines shown on the aerodrome and demonstrated in flight, the Vickers company had an extra demonstrator in the form of one of the Supermarine "Scapa" flying boats (two Rolls-Royce "Kestrels"), which came over during the afternoon and gave an exhibition of manoeuvrability such as one hardly expects from a flying boat. Dives and climbs, tight turns a few feet up, and so forth, were executed with remarkable ease.

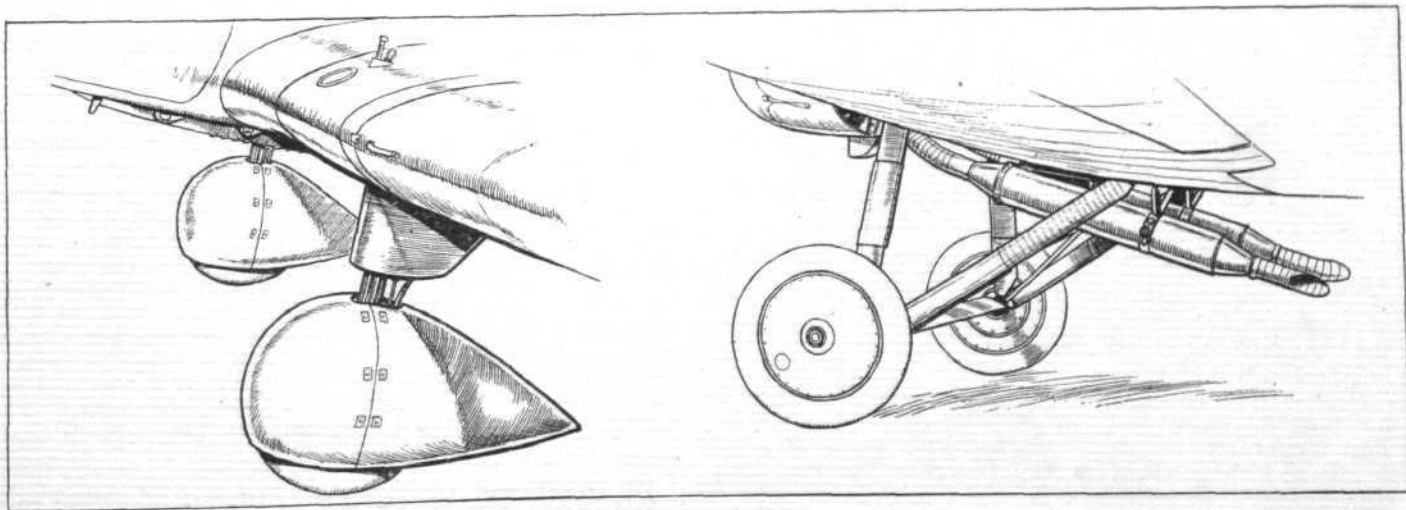
The two machines on view on the aerodrome were a "Vellox" with two Bristol "Pegasus" engines, and a "Vincent" General Purpose aircraft, also with "Pegasus" engine. The "Vellox" is a transport machine of 13,500 lb. gross weight, of which 5,300 lb. is disposable load. The machine is well adapted for the transport of heavy cargo.

Developed from the "Vildebeest," the Vickers "Vincent" is one of the more recent types to be adopted for general-purpose flying in the Middle East. The machine is remarkable for the fact that it carries as disposable load nearly the equivalent of its own weight. At Hendon the "Vincent" was shown with the auxiliary fuel tank slung under the fuselage. This tank gives the machine a range of 1,250 miles.

Mr. Banting demonstrated the "Vellox," and Mr. Louis is "Vincent." Quite amazing was the slow-flying demonstration of the former. Its descent resembled that of an Autogiro, although the machine was not fitted with slots. Mr. Louis showed his faith in the "Vincent" by looping it.

**Westland Aircraft Works.**—Both the types shown by Westlands were taken from the New Aircraft Park at the R.A.F. Display, the P.V.7 General Purpose monoplane and the F.7/30 single-seater fighter.

The Westland General Purpose monoplane with Bristol "Pegasus" engine was designed with the object of providing a good view for pilot and observer. For that reason the monoplane wing was chosen. Air brakes in the form of split trailing edge flaps are fitted.



LEGS AND SILENCERS: On the left, the new undercarriage of the Percival "Gull." On the right, the silencer of the Bristol "Perseus" sleeve-valve engine on the Bristol "Bulldog IV."



A "DEAD STICK" APPROACH: Mr. Brie gliding the Autogiro in with the Siddeley "Genet Major" engine stopped. (FLIGHT Photo.)

Originality has been displayed in the design of the Westland F.7/30 single-seater fighter (Rolls-Royce "Goshawk" engine). Instead of being placed in the nose, the engine is housed inside the fuselage, between upper and lower wings, and the pilot sits in front of the engine. A long shaft transmits the power of the engine to the airscrew. Mr. Penrose demonstrated that the G.P. monoplane is very manoeuvrable, but the fighter could not be shown to best advantage as it has not yet completed its service tests.

When the flying demonstration was over the visitors assembled in a large marquee for a very excellent luncheon. Mr. H. J. Thomas, of the Bristol Aeroplane Co., welcomed the guests in a very excellent speech, which he afterwards repeated in somewhat abbreviated form in French. He said that from the corners of the five continents the guests had been drawn. Even the League of Nations never received such wide support! Aircraft reduced distance and time and broke down barriers, thus helping to the better understanding of nations and individuals. It was not possible to show in one day all the progress made, but he thought the exhibits were sufficient to show the quality of the products of the British aircraft industry.

The rest of the afternoon was spent in passenger flights and in inspection of the "Static" Exhibition described hereafter.

## THE "STATIC" EXHIBITION

"Static" is something of a misnomer for this part of the display and exhibition because a large number of the stands in the hangar which housed the exhibits of members and associate members of the Society of British Aircraft Constructors carried sectioned engines or models which were by no means static. They were arranged to show their working parts working, and so exposed that no visitor could go away without being impressed by the perfect workmanship which goes into articles of this kind. The exhibition this year was larger than ever and was representative of every branch of the aviation industry. It

**Armstrong-Siddeley Motors, Ltd.**—Most prominent on this stand was a part-sectioned "Tiger" 14-cylinder air-cooled radial engine with an output of 700/770 h.p. at 5,000 ft. An electric drive was arranged so that visitors could see the working parts of this engine in operation. The "Tiger" was fitted to several aircraft at the Display. Other engines shown were the "Panther VII," a somewhat smaller version of the "Tiger," giving 540/612 h.p. at 12,000 ft. The smallest of the Siddeley series was a "Genet Major" 7-cylinder air-cooled radial of 140/155 h.p. Apart from these engines the stand was decorated with enlarged photographs of aircraft and engines produced by the Siddeley interests. Siddeley engines are made in a variety of sub-types, which can be geared or ungeared, naturally aspirated, medium supercharged or fully supercharged, and full details of these were available in leaflet form. All their engines are particularly robust, and designed not only so that production costs can be kept down, but also that the maintenance costs may be kept at a low level.

**Bristol Aeroplane Co., Ltd.**—Bristol engines have many times been described in FLIGHT, and are now fitted as standard to aircraft of various types throughout the Royal Air Force. One of the first things to catch the eye on their stand was a very fully sectioned "Pegasus III" so arranged that it could be seen working with red lights appearing intermittently representing the explosion in each cylinder. The "Pegasus III" is, like all the Bristol engines, a 9-cylinder air-cooled radial, and its power output is 750 h.p. at 4,750 ft. This is the very latest model of this engine, and is the same as those which carried the two Westland machines over Mount Everest so successfully. Close behind this was a "Pegasus II" with a power output of 650 h.p. at 2,500 ft. This engine was noteworthy because it was shown with the

ordinary production and finish and not especially prepared in any way. Bristol finish is, however, so perfect that there was really very little to choose between this and the other models. The other engine on the stand was the "Mercury VI" which is similar to the other engines, but of rather more compact design with small overall diameter, and is intended for use in high performance fighting aircraft which have to attain high speeds at high altitudes. Being fully supercharged, this engine maintains a power output of 645 h.p. at 15,500 ft. It was shown with an exhaust collector ring in front of the engine forming the leading edge to a ring cowl.

**Cirrus Hermes Engineering Co., Ltd.**—A great deal of design work has been done since the Cirrus Hermes Engineering Company was reconstituted with a new Board of Directors and transferred to Brough, where the engines are now being manufactured in the same factory as Blackburn aeroplanes. Two "Hermes" engines were shown on the Blackburn Co.'s stand, one, the "Hermes IV" inverted 4-cylinder in-line air-cooled engine of 120/130 h.p., the other the "Hermes II," similar in every respect but upright. The Company have in hand two other engines, the "Cirrus Minor" which it is understood will be a 4-cylinder inverted engine of about 80 h.p., and the "Cirrus Major," similar to the "Hermes IV," but with the power output increased to about 135 h.p. The "Hermes IV" on the stand was fitted with the Caple starter mechanism, which was also shown dismantled, and an accumulator enabled demonstrations to be given of the ease with which it turns over the engine.

**De Havilland Aircraft Co., Ltd.**—De Havilland engine exhibits were confined to two, the larger, a "Gipsy Six," an inverted 6-cylinder in-line engine of 184/205 h.p., and the



smaller the "Gipsy Major" of the same general design, but having only 4 cylinders and a power output of 130 h.p. The former had only been got to the Display, so to speak, "by the skin of its teeth," and was not a specially finished show model, so visitors were able to see the excellence of the standard finish. Apart from these engines, the stand was decorated with a large number of photographs, mostly taken by FLIGHT, showing De Havilland aircraft powered with "Gipsy" engines of various sizes and mostly flying. The "Gipsy Major" was sectioned so that the engineering construction and working could be seen.

**D. Napier & Sons, Ltd.**—Napier's stand was most distinctive, all the engines shown being specially finished for the Display with green-painted crank-cases matching the green carpet of the stand. Plating and careful attention to other details completed what was undoubtedly an extremely attractive display. There was naturally a great deal of interest shown in the new Halford "Dagger," which was briefly described in FLIGHT last week. This is a 24-cylinder air-cooled engine built on the "H" principle, so that it has four banks of six cylinders, two of which are upright and two of which are inverted. Two crankshafts are utilised and geared to the airscrew hub. The rated power of the "Dagger" is 705 h.p. at 12,000 ft. It is a high-speed engine with 4,000 as the maximum r.p.m. The dry weight is 1,280 lb. It was seen at the Display flying in a Hawker "Hart." The "Rapier II" is a 16-cylinder version of the same engine giving 305 h.p. at 10,000 ft. The other engine on the stand was the "Javelin," a six-cylinder inverted engine giving 160 h.p. at sea level, and very similar in its general construction and operation to one bank of the well-tried Napier "Lion," except that it is air-cooled instead of being water-cooled. Apart from these engines, there was an interesting display of component parts like cylinders, connecting rods, pistons, and so on.

**Rolls Royce, Ltd.**—This firm confined themselves to a single engine on a stand near the centre of the display hangar. It was a "Kestrel" VI, which is one of the latest versions of this 12-cylinder liquid-cooled engine. The power output is 600 at 11,000 ft. The dry weight is 944 lb. In this form it differs somewhat from the previous "Kestrel" models and also from the "Goshawk"; the former were water-cooled and the latter is steam-cooled, but the "Kestrel VI" is cooled by a composite system employing both steam condenser and a water radiator. "Kestrel" engines are fitted in a very large proportion of the high-speed aircraft now in service with the Royal Air Force.

**Accles & Pollock, Ltd.**—Steel tubing is the speciality of this pioneer firm, and on their stand were arranged examples of the many kinds of tube used in aircraft construction. There were tubes for spars, streamline tubes for axles and struts, special tapered axle tubes, and a large variety of tubes of special section and tubes which had undergone various manipulations. In keeping with the demand in modern aircraft construction, the majority of the tubes shown were of stainless steel.

**Edgar Allen & Co., Ltd.**—Now that high-tension steels are so widely used for machined parts of aircraft, it is not surprising to find a company like Edgar Allen specialising in tools for working this kind of material. Their display consisted of a large variety of these. They also had on their stand a range of manganese-steel skid shoes for aeroplane tail skids, and a variety of permanent magnets for use in aeroplane wireless apparatus. Apart from the tools already mentioned, this company were displaying smaller, but not less important tools, like files, reamers, saws, and so on.

**Sir W. G. Armstrong Whitworth Aircraft, Ltd.**—A wide range of fuselage joints of the kind used in the Armstrong-Whitworth aircraft factory for the construction of their aircraft were shown. There was also a series of specimens of seamed tubing, as well as specimens of riveting and of the special riveting tools used by the company. Photographs of the "Atalanta" and others of the company's aircraft formed a background to the stand.

### The Blackburn Aeroplane & Motor Co., Ltd.—

Hung on the wall along the back of this stand was a wing of the "Segrave" light two-engined monoplane built with the Duncanson single spar. This spar, which has been dealt with at length in FLIGHT, is of tubular section tapering to the wing tips, and having its central portion used as tankage for the fuel. One of the advantages of this form of single-spar construction is a considerable saving in weight. For example, substituting this wing for the twin-spar wooden wing which was formerly fitted to the "Segrave," has resulted in a decrease of structural weight of 42 per cent., and an increase of pay load of 52 per cent. The wing is constructed entirely of metal, and is similar to that which will be used for a whole series of commercial aircraft which the Blackburn Co. are designing. A model of one of these types which will use two Napier "Rapier" engines was on show. Another model was of a projected six-engined civil flying boat.

### The British Thomson Houston Co.—

Situated in a prominent position in the centre of the Display, a glass case covered a range of B.T.H. aircraft magnetos suitable for 4, 7, 9, 12, and 14 cylinders. There were also two types of the B.T.H. single-stage air compressor. Magnetos of both the rotating armature and polar inductor types are manufactured. They have been used in a number of record flights and played their part in Schneider Trophy Contests.

### The Brooke Tool Manufacturing Co., Ltd.—

This company showed not only a great variety of structural aircraft fittings, but also tools like milling cutters, reamers, and twist drills of the types used for manufacturing purposes. A company like this, which specialises in machine work for aircraft construction naturally deals with such a large variety of fittings that it would be impossible to display them all. In size alone they have dealt with articles ranging from large oleo under-carriage legs at one end of the scale down to small eye bolts at the other.

### Brown Bros., Ltd.—

It would be impossible in a small space to describe all the aircraft parts supplied by Brown Bros. Every kind of component is available from their stock, and a very large assortment of these were shown on their stand. Bolts, nuts, fork joints, pins and such like, not only in mild or stainless steel, but also in duralumin and brass; switches, cable fittings, thimbles, clamps, cleates, unions, tank fittings, fuel cocks, pipe couplings and so on, all come under the things listed by them. They do not even finish at metal units, as their stand also included examples



WITH SLEEVE VALVES: The Bristol "Perseus" engine in the Bristol "Bulldog IV." The exhaust collector ring is faired into the engine cowl. (FLIGHT Photo.)



AVROS AT THE S.B.A.C. DISPLAY: From front to back, the "Cadet," the Autogiro, the "Commodore," the 626, and the 642. (FLIGHT Photo.)

of fabric, tapes and webbing, serrated edge tape, cotton tape, and, in fact, all the materials for covering the supporting surfaces of aeroplanes.

**Callender's Cable & Construction Co.**—Nowadays the amount of electrical gear in an aeroplane is very considerable indeed, and therefore many varieties of electrical cables are required. Every sort of cable was shown on Callender's stand, which included single and multiple-core cables with various forms of protective outer covering, including the metal brading which has to be used for the ignition cables when radio is installed.

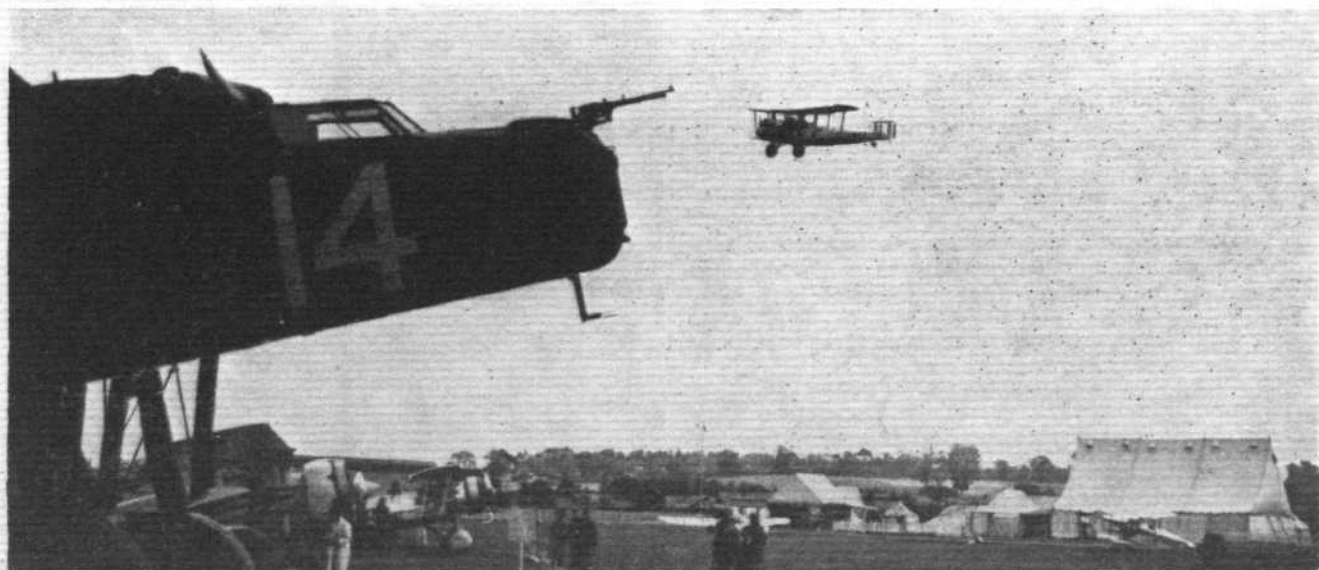
**Cellon, Ltd.**—Both the internal and the external surfaces of all aeroplanes have to be protected from corrosion with various forms of protective covering and the Cellon stand showed that this form of protection can, as well, be an extremely decorative one. Examples of their new Scheme "Z" finish were shown on frames which have been exposed to all weathers on the Test Roof of their factory since August 8, 1933. This finish is a highly polished one comparable to a motor-car finish which is obtained by buff or hand polishing. Naturally, a high finish of this nature necessitates the use of a large number of coats, but the Cellon "Z" Scheme enables this polish to be obtained with only eight coats as compared with the 20 or more previously used. Other panels also showed their "Cerric" cellulose lacquer and "Cerrux" synthetic finishes suitable both for stoving and air drying.

**Chance Bros. & Co., Ltd.**—Aerodrome lighting for airports and air routes is one of the chief activities of this company. On their stand at Hendon was a new type of boundary light wherein the amber globe was mounted on the top of an expanded metal covering surrounding an

illuminated glass pillar. The advantages claimed by this form of boundary light are that it collapses easily in the event of a collision with an aeroplane, thus avoiding damage to the latter; that the units can be easily replaced without disturbing any of the underground work; and that the separate lamp which illuminates the white glass pillar inside the expanded metal covering gives the pilot a good idea of perspective when he is landing. Photographs on this stand also showed a great deal of the airway lighting work which has been carried out by the company.

**Dunlop Rubber Co., Ltd.**—All the centre of the Dunlop stand was taken up with the huge tyre which was specially built for the Short "Scylla," Imperial Airways latest air liner. This tyre was 70 in. in height and 20 in. in diameter. Many other smaller tyres were also shown, not only of the high-pressure types but also low and medium pressure. Small tyres suitable for tail wheels were shown. The Dunlop pneumatic brake equipment was displayed, as was the hydraulic brake on a stand in a form whereby its action could be tested. Other Dunlop products of interest on their stand were examples of Dunlopillo upholstery and cockpit coamings.

**English Steel Corporation, Ltd.**—Crankshafts of different sizes for such varied engines as the Rolls-Royce "R," which was used in the Vickers Supermarine S.6 B. which won the Schneider Trophy for Great Britain, the Napier "Culverin" diesel engine, De Havilland "Gipsy" engines, and many others, were shown on the stand of this company. Besides these outstanding examples of drop forgings there were airscrew shafts and hubs, and precision ground bars made from both stainless and alloy steels. There was also a range of aircraft fittings made by Vickers (Aviation), Ltd., from steel manufactured by this company.



NIGHT BOMBER AND TRANSPORT TYPES: In the foreground the nose of the Handley Page "Heyford." Flying past is the Vickers "Vellox." (FLIGHT Photo.)





FACING THE STARTER: The three Hawker machines "Fury," "Hart" and "Pegasus-Hart" about to take off. (FLIGHT Photo.)

**The Exactor Control Co., Ltd.**—A form of control lacking the limitations of the rigid push and pull rod system and yet retaining its directness of motion has long been sought by aircraft designers. The Exactor Control Company have produced their Hele-Shaw Beacham Remote Control in response to this demand and this was fully described in FLIGHT for March 15th, 1934. Their exhibit at Hendon consisted of two parts. The one showing, by means of diagrams, the theoretical explanation of how it works and demonstrating the method whereby all backlash has been eliminated and exact and positive movement achieved, although only a single pipe line containing fluid connects the "transmitter" and "receiver" ends of the control. The other portion of the exhibit was composed of two control units arranged in the same manner as the throttle controls of a twin-engined aircraft. The company is also developing the Exactor control so that it will be applicable to every form of control used in aircraft.

**Fairey Aviation Co., Ltd.**—Forged metal airscrews of various sizes, were, as expected, the principal attractions on the Fairey stand. Particularly interesting examples of this type of airscrew which were on show were a very large three-bladed type and the actual airscrew of the Vickers-Supermarine S.6B machine which won the Schneider Trophy outright for Great Britain. Some excellent photographs and models of typical Fairey aircraft including the "Fox IIM" and the "Seal" helped to make the stand one of the most attractive in the exhibition.

**Thos. Firth & John Brown, Ltd.**—Shown on this stand were aircraft and aero engine parts and fittings manufactured from the well-known steels produced by the company. These included connecting rods, shafts and pinions, spars, struts, oil pump driving gear, spindles, gudgeon pins, valves, valve seatings, etc. There were also fuselage fittings and portions of spar in high tensile and stainless steel, rivets, stainless flexible cables and various fittings of alloy steels.

**The Gloster Aircraft Co., Ltd.**—Two Hele-Shaw variable pitch airscrews, one a light alloy two-bladed type and the other of welded steel, were shown. In these airscrews the pitch may be varied during flight. The mechanism is hydraulically operated and employs lubricating oil from the engine. Although the gear is automatic it can, if necessary, be placed under the control of the pilot.

**J. J. Habershon & Sons, Ltd.**—Cold rolled steel strip formed the substance of this firm's exhibit. The use of steel strip for aircraft construction has increased enormously during the last few years. Now, especially for military aircraft, strip is used as the material from which sections are drawn for

spars and fittings of all kinds, like longerons, wing ribs, struts and in fact all the many parts which together make up the strong and yet surprisingly light aircraft structures of to-day. Habershon's have specialised in cold rolling strip ever since this material first came into demand. Strip of all specifications of nickel chrome, stainless steel, rustless iron, high carbon steel, and high manganese steel were shown.

**High Duty Alloys, Ltd.**—Saving weight is one of the chief cares of the aero engine designer as well as of the aircraft designer and one of the methods by which this is achieved is by the use of light alloys like "Hiduminium" R.R. Alloy. On the stand of this firm there were all kinds of castings, forgings and stampings. One which stood out by virtue of its size and workmanship was the crankcase for the Napier "Culverin" diesel engine; this double-ended case is a truly massive and interesting piece of work. Other crankcases shown were the stampings for Bristol "Pegasus" and Armstrong-Siddeley engines. Many other engine parts were also shown like, pistons, cylinder head and connecting rod stampings. On the same stand was a range of magnesium castings produced by an associated company, Magnesium Castings & Products, Ltd.

**H. M. Hobson, Ltd.**—Aeroplane engine carburettors of many and varied kinds were particularly well arranged on this company's stand. There were plenty of examples to choose from for the display as engine makers like, Armstrong-Siddeley, Bristol, Cirrus, Hermes, De Havilland, Napier and Pobjoy all use Claudel-Hobson carburettors on their engines. Apart from actual carburettors there were many different forms of control which were both neat and simple. Their Pilot's Cockpit Control was interesting as it was so arranged that through interlocking of the throttle and altitude levers, it was impossible for the pilot inadvertently to run on too weak a mixture or at any time to get the two levers incorrectly placed with regard to one another. Automatic mixture controls, Boost Controls, fuel pumps and depression gauges formed other parts of the exhibit.

**Lodge Plugs, Ltd.**—A complete range of Lodge aircraft plugs was shown, including the popular 12-mm. type A.55 for use in De Havilland "Gipsy" engines, the new 14-mm. size now being widely adopted, the well-known 18-mm. types in the class of the A.2 for Armstrong Siddeley, Napier and Rolls Royce, and the A.4 types suitable for use in Bristol and other engines. In addition, Lodge radio screening caps, designed to prevent the ignition system of an engine interfering with the radio reception were on view. The essential part of the Lodge screening cap is made of steatite, which is a good material for withstanding heat, oil, moisture and electrical brush discharge. The steatite is thickly coated outside with metal, making it quite opaque to electrical radiation.

**Marconi's Wireless Telegraph Co., Ltd.**—The Marconi stand comprised a display of new types of wireless transmitting and receiving apparatus for both military and civil aircraft, one of the Marconi "homing" instruments (type A.D. 32), a small attachment which can be affixed to almost any modern Marconi aircraft receiver, enabling it to be used as a direction finder, a Marconi-Newton constant-speed windmill for aircraft generators, and similar accessories. The transmitters and receivers included the type A.D. 37/38, suitable for both telephony and telegraphy on either medium or short wave lengths, the A.D. 41/42 adopted by Imperial Airways, Ltd., for use in their Short "Scylla" and "Syrinx" aircraft and the type A.D. 43/44, specially designed for high-speed fighting aircraft, providing them with the advantages of wireless contact between units in the air and with the ground, without seriously impairing their essential qualities of speed and manoeuvrability.

**M.R.C., Ltd.**—A new form of remote control was shown by this company in its application to the rudder bias of the twin engine Airspeed "Envoy." This control, which makes use of a specially-wound cable having a raised helix on its outer circumference, has the advantage that rotary motion may, through its use, be readily changed into reciprocating motion and *vice versa*. It may also be used for straightforward push-pull motion.

**The Palmer Tyre, Ltd.**—This company, which has done a very great deal of development work in connection with suitable wheels, tyres and brakes for aircraft, showed a full range of high and medium-pressure wheels and a comprehensive range of brakes actuated by air and oil, and brake controls, including the Automatic Differential Action for steering. This, to a great extent, prevents the complication necessitated by the multiplying of controls normally associated with brakes, giving the pilot of the aircraft normal use of his throttle and flying controls.

**The Plessey Co., Ltd.**—Four main exhibits—transmitting and receiving equipment Type A.C.44, an aerodrome receiver, a radio receiver for light aeroplanes and an aircraft short-wave receiver—were shown on the Plessey stand. The A.C. 44 is a combined transmitting and receiving equipment intended for use in commercial aircraft, and is designed to give a telephonic communication range of up to 180 miles, and a telegraphic range of 300 miles. The aerodrome receiver has been constructed to cover wavelengths between 500 and 20,000 m., and the light aeroplane receiver, which weighs 15 lb., to meet the requirements of the private owner who wants an equipment which will receive broadcast programmes and weather forecasts. Although no transmitter was shown with the short-wave receiver, entire short-wave

transmitting and receiving apparatus for military and commercial purposes is being developed by the company.

**Reynolds Tube Co., Ltd.**—A representative selection of steel tubes to all specifications, including round and section tubing and examples of tube manipulation, was shown. One unusually interesting feature was part of a tubular rotor spar blade, recently manufactured for the Cierva Autogiro Company for use in the largest Autogiro now being built. The tube, which is in two sections, is taper gauge from end to end, commencing at  $\frac{3}{8}$  in. at the root and tapering to 12 gauge in the first section. The second section is 12 gauge tapering to 17 gauge. Joining is done by a special liner tube which telescopes into the ends of the two sections. The outside diameter of the spar is  $2\frac{1}{8}$  in. Seamless aluminium-alloy tubes and extruded and drawn sections, including machining rods, are manufactured by the company. The alloys on which it is concentrating are of the R.R. series, including R.R.56, for which a tube specification has now been issued, namely DTD. 220, and a specification for rods and bars—DTD. 210. This material, which shows an increase in strength of 25 per cent. over other aluminium alloys used in tubular form and as extruded sections, was shown in the form of tubing, manipulated tubes, and extruded sections.

**Rotax, Ltd. (Aviation Department).**—Exhibits on the stand of this company were Watford magnetos, Rotax Eclipse aero-engine starters, generators and night-flying equipment, rotary transformers and hand-driven generators, and electric tools. Magnetos included examples for the "Kestrel," "Pegasus," and "Rapier" engines. Rotax Eclipse hand-operated inertia starters are now being supplied to the Government in large quantities. The type Y.150 direct-cranking electric starter, which weighs  $16\frac{1}{2}$  lb., has been standardised for use on the "Gipsy Six" engine, which it cranks continuously at 70 r.p.m. The starter is operated by a solenoid switch, the push button being located in the cockpit. An R.A.F.-type 12-volt, 500-watt engine-driven generator being made for the Air Ministry and for use in civil aircraft was also exhibited. The machine has to be driven at a speed of 5,000 r.p.m. and incorporates a cooling jacket to which air is fed by the slipstream through pipes.

**Rotherham & Sons, Ltd.**—A selection of A.G.S. couplings, unions, filters, flanges, adaptors, and other special aircraft parts manufactured from brass and duralumin was the main feature. One of the more interesting products is a mechanical air pump, a special feature of which is that the lubrication is so arranged that one filling of oil lasts for at least two days. It is adjustable for pressure and gives a range between 1 lb. and 10 lb. All working parts are enclosed and protected from dust.



IN THE LINE: The first machine is the Westland G.P. monoplane. Beyond may be recognised the Fairey G.P. and "Seal" and the Vickers "Vellox." (FLIGHT Photo.)



**Llewellyn Ryland, Ltd.**—The stand of this company was most ingeniously arranged. Front and back were finished with "Rylard" enamel to Specification D.T.D. 62, and the table top—a sheet of duralumin—was finished in "Ardak" synthetic finish to the same specification. Of particular interest was a wooden panel finished with "Rylard" varnish, which was put into a glass jar filled with salt water and sealed, three years ago, by a councillor of the Birmingham City Council. Also exhibited were aircraft parts in duralumin, steel and wood, finished with "Zilak" cellulose, "Ardak" synthetic finish, "Rylard" varnish and enamel, and "Rylard" stoving enamel.

**Shell Mex and B.P., Ltd.**—Samples of oils and greases, including the "Double," "Triple," "Aeroshell," "Spirax worm gear" and "Gear" varieties were shown on the stand of this company. The more important petrols distributed by the company include "Shell," "Shellmex," "Shell Aviation," "Racing Shell," B.P. "Ethyl," B.P. "Commercial," and B.P. "Aviation." A wide range of kerosenes is also marketed by the company.

**Short Brothers (Rochester and Bedford), Ltd.**—An all-metal float designed for the Hawker "Osprey" Fleet Fighter Reconnaissance seaplane was the principal exhibit on this stand. There were also some very attractive coloured enlargements of the R.24/31, R.6/28, Singapore II flying boats made by the company, and of a Hawker "Hart" seaplane with Short floats supplied to the Estonian Government for general purpose work.

**Silvertown Lubricants, Ltd.**—This exhibit took the form of a cascade of Speedolene Aero Oil. This oil was pumped from a base to the top of a number of glass steps, and, from this point flowed back to the base, rotating continuously. The cabinet was illuminated behind the glass steps and the lighting clearly illustrated the oil's clarity.

**Smith's Aircraft Instruments, Ltd.**—Probably the most attractive exhibit on the stand of this firm was the Three Axes British Automatic Control, mounted in such a manner as to permit its use being demonstrated in all three axes. This exhibit was particularly interesting as the "third axis" control was only recently released from the Secret List and this was the first time that it has been shown to the public. Other features included a complete range of dashboard instruments and panels, Petroflex tubing, Essex fire extinguishers, the new Fraser Nash safety enclosed wing tip flare device, portable altimeter and airspeed testing apparatus, and a new model "Carter" centrifuge for oils. Some beautiful small scale models of well-known aircraft suitable for use as car mascots helped to make the stand most attractive.

Also attracting attention on this stand were products of **Henry Hughes & Son, Ltd.**, which included a series of aperiodic compasses, especially their new vertical model, the P.6. Besides these, there were the "Holmes" Tele-Compass, "Addison-Luard" course and wind calculators (models "B" and "D") and navigation instruments of numerous types. That remarkable instrument, the "Wimperis" course-setting bomb sight, was also there. Other exhibits by the company were a turn and bank indicator, rate of climb indicator, and a recent type of R.A.E. sextant.

Incorporated in the display by Smith's Aircraft Instruments, Ltd., was a selection of the **K.L.G. Company's** sparking plugs for all types of aero engines, and a range of the latest pattern wireless screening caps which prevent the ignition system interfering with radio reception. Also on show was a special stand of K.L.G. "Wizard" plugs and an enlarged reproduction of a testimonial received from Imperial Airways concerning their use of these plugs in the engines of their aircraft.

Also on this stand were aircraft accessories produced by **Siebe, Gorman & Co., Ltd.**, including oxygen-breathing apparatus for high-altitude flying, harness and life-saving belts, and collapsible dinghies, food droppers, and examples of A.S.I. calibrators, altimeter calibrators and bottles for compressed-air starters.

**Standard Telephones & Cables, Ltd.**—The smallest set exhibited was a remotely controlled short-wave transmitter and receiver for use in Fighter Aircraft (type A.T.R.3), giving communication on short wave telephony. The total weight was less than 70 lb. Also on view was a type A.T.R.4 transmitter and receiver specially designed for use on internal air lines. This can be operated by the pilot

through remote controls or by a radio operator who has access to the apparatus. The total weight was 78 lb. Completing the exhibit was a type A.T.R.6 high-powered transmitter and receiver, combining long and short wave transmitter and receiver for use on transcontinental air lines. This was intended to provide telephony and telegraphy on long or short waves in large commercial aircraft where the radio operator had direct access to the apparatus. The weight was approximately 100 lb.

**J. Stone & Co., Ltd.**—Aero engine parts in the form of castings, die-castings, forgings and stampings in non-ferrous alloys, castings and die-castings in "Ceralumin" a new aluminium alloy, and castings and die-castings in "Elektron" magnesium alloy were the chief exhibits on the stand of J. Stone & Co., Ltd. The company also manufactures water-distilling apparatus, pumps and gears, and aircraft rivets and washers in aluminium, duralumin, stainless steel and other materials.

**Titanine-Emallite, Ltd.**—On the Titanine stand were exhibited applied specimens of Titanine dopes and finishing varnishes for fabric and plywood in the form of aeroplane wings and fabric, and plywood panels, of which the actual stand was composed. In addition there were metal specimens coated with Titanine synthetic lacquers illustrating metal protection schemes. The exhibits embraced the standard Silver and "Nivo" finishes employed on Service aircraft, as exemplified by the Air Ministry Approved Titanine Doping Schemes T.2.S, T.4.S, etc., and a special feature was the Titanine "Satin Finish" in a variety of colours for civil aircraft, both on fabric and plywood. Titanine doping materials were employed to coat the entire stand including even the lettering on the signboards.

**Vickers (Aviation), Ltd.**—Here was exhibited a complete range of Vickers aircraft accessories including sectioned examples of Vickers oleo shock absorbing under-carriage struts, Vickers-Potts oil coolers, air compressors and pumps. There was a large model illustrating the working of the Vickers air operated wheel brakes. Of especial interest to designers was the Vickers-Potts "U" type oil cooler for use in high performance aircraft, the fins of which have a greater effective area, and, at the same time, small aerodynamic drag than the old model. A series of large scale models of Vickers-Supermarine aircraft, including the "Scapa" flying boat and the "Vildebeest" torpedo bomber and some excellent drawings and photographs completed the stand.

**C. C. Wakefield & Co., Ltd.**—Various grades of Castrol aviation oils which are available in every part of the world were exhibited and photographs were displayed illustrating the first flight over Mount Everest, the world's longest non-stop flight and the world's fastest flight, each of which was achieved with the aid of Castrol. An excellently produced booklet entitled "1933 Achievements" recorded notable achievements aided by products of the company.

**Wellworthy, Ltd.**—It is claimed that there are no piston rings in the world of such strength and elasticity as the "Thermocrom" rings made by Wellworthy, Ltd. On the company's stand were shown some "special purpose" rings manufactured from this material. There were also compression and scraper rings manufactured from centrifugally cast material to Air Ministry Specification 4K6 by the Gray and Howlett patent process, which ensures perfect circularity and equal radial pressure. Petrol priming pumps were also shown.

**The Williamson Manufacturing Co., Ltd.**—An "Eagle IV" aircraft camera with Williamson all-metal louvre shutter and a magazine capacity of more than 200 exposures was the main feature of the Williamson stand. In this camera the magazines are easily interchanged in the air without interrupting the sequence of exposures. The electric driving motor is housed in the body of the camera itself. Also on show was the G.22 camera gun designed for aerial combat practice in this model results can be quickly and easily processed by daylight developing tanks. The gun employs a special telephoto lens in conjunction with the Williamson louvre shutter and weighs only 10 lb. Another exhibit of great interest was the "Eagle" stereo-plotter which enables true-to-scale line maps of hilly country to be quickly and simply drawn from pairs of stereoscopic air photographs. Contour lines may be inserted and heights read simultaneously from a vernier scale.

# THE FOUR WINDS

ITEMS OF INTEREST FROM ALL QUARTERS

## European Air Cruising

Starting on July 21, a 3,000-mile cruise of Europe will be undertaken by an Imperial Airways' machine of the "Heracles" class. This tour has been organised by the Polytechnic Touring Association.

## Instructional Tour Arrives

The four machines of the Bombay Flying Club, led by Flt. Lt. A. Binley, arrived at Heston on Tuesday, June 26, after a 15-day flight.

## Gliding Record?

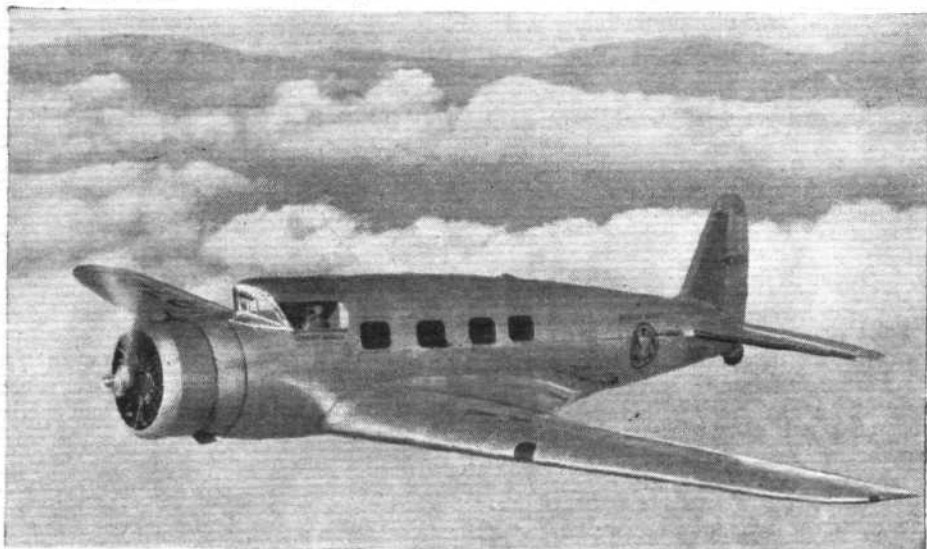
An American pilot, Mr. Richard C. Dupont, it is reported, covered a distance of 155 miles at the opening meeting of the Soaring Society of America. He glided from Elmira, New York, across the Allegheny Mountains, to Baskingridge, New Jersey, in 5 hr. 50 min.

## Cobham Display Fatality

Everyone who has seen the Cobham Air Pageant will be sorry to learn that Capt. W. Mackay died last Sunday at Farnborough as a result of injuries received in a crash on the previous day. He had taken part in no fewer than 600 displays all over the country.

## A Bellanca's Second Atlantic Crossing

Two Polish airmen, by name Adamowicz, left Harbour Grace in a Bellanca monoplane, with one crossing already to its credit, last Friday morning in an attempt to fly to Warsaw. They were forced down at Flers, Normandy, owing to lack of petrol, and afterwards flew on to Warsaw, but came down once again near the German-Polish frontier.



CRUISING AT 215 M.P.H.: The latest V I-A Vultee commercial machine flying above the clouds of Southern California.

## Renfrew Aerodrome

Every Saturday and Sunday during the summer the public are admitted to Renfrew Aerodrome at the moderate cost of 2d., and flights are given at 5s. per head.

## A Souvenir

One of the airscrews from the Imperial Airways' air liner *City of Karachi*, which was the first of the D.H. "Hercules" type to be in regular operation between Kisumu and Capetown in 1932, has been presented by I.A.L. to the Aero Club of East Africa. The "prop" has been placed in position in the club-house on the Nairobi Aerodrome, with a silver plate describing its historical significance.

## Coal Petrol at the Display

For the first time, fuel produced by low-temperature carbonisation from British coal was used in the Display. Incidentally, Nos. 3, 17, 23, 25, 32, and 41 fighter squadrons, and one flight of No. 24 communication squadron, are all using this fuel regularly.

## Exhibition in Moscow

Full-sized models of aeroplanes and dirigibles of various designs are on view at the aviation exhibition which was opened in Moscow a few days ago. This exhibition is being held at the City of Science and Technique, and among the exhibits is a model of the gondola of the U.S.S.R. stratostat.

## Twenty-five Years Ago

From FLIGHT of July 3, 1909.

"It is a little world apart, this of the flying movement, but those in it are striving day by day . . . to broaden its opinions and to bring closer that period which must ultimately and inevitably come to pass, when there will be no such section of the community as will call themselves 'Aeronauts,' any more than there are people who call themselves 'Travellers in Railway Trains.'"



HOME MADE! Riley Burrows with the machine in which he covered a three-mile triangular circuit at 185 m.p.h. near Los Angeles. Its wing span is 11 feet.

## U.S. National Balloon Race

Birmingham, Alabama, will be the scene of the National Balloon Race of 1934, according to an announcement made by officials of the National Aeronautic Association. The race is scheduled to start on Saturday evening, July 28, and the winners of first, second, and third places will constitute the American team to compete in the Gordon Bennett International Race, which will start from Warsaw on September 20.



### German-Chinese Factory

It is reported that a tentative agreement has been reached between the Nanking Government and the Junkers Co. for the construction of a Sino-German aeroplane factory in China, at a cost of 3,000,000 yuan, of which two-thirds are to be borne by the Chinese Government.

### Copenhagen to Faroe Islands

A Danish Hawker "Dantorp," fitted with an 800 h.p. Armstrong-Siddeley "Leopard" engine, recently accomplished a flight of 1,000 miles from Copenhagen to Faroe Is. in 9 hours' flying. It was manned by Capt. Grandjean, Lt. Muentner and wireless-mechanic G. Rasmussen. They left the Naval Air Station at 3.30 a.m., landed at Thisted, Jutland, to take in fuel, and proceeding landed at Tveraa, in Trangisvaag, at 3 p.m., having encountered strong headwinds until passing the Shetlands.

### Aircraft Registrations

The Joint Aviation Advisory Committee of Lloyd's Register and the British Corporation Register announce a total of 1,148 registered machines up to June 15 last, made up as follows (foreign, included in the total, being given in brackets):—Privately-owned, male, 463 (21); ditto, female, 47 (5); agents, 58 (4); constructors, 111; clubs, 91; non-classified, 3 (1); business (non-aviation), 38 (2); aerial work, 4; taxi, school and joyriding, 281 (5); Imperial Airways, Ltd., 39; National Flying Services, Ltd., 13.

### THE ROYAL AERO CLUB OF THE UNITED KINGDOM

#### CERTIFICATE OF PERFORMANCE UNDER THE COMPETITION RULES OF THE ROYAL AERO CLUB

The object of the test as declared by the Entrant was to establish a world's altitude record for an aircraft fitted with a Compression Ignition Engine.

Engine	Bristol Phoenix
Constructors	Compression Ignition The Bristol Aeroplane Co. Ltd. Filton House, Bristol
Type	9 cylinder air cooled radial
Bore and Stroke	5.75 x 7.5
swept Volume	1753 cu. ins.
Engine R.P.M.	2800 normal, 3000 maximum
Compression Ratio	0.655, engine speed
Rated Power at normal R.P.M.	115 B.H.P.
Take-off Power at normal R.P.M.	170 B.H.P.
Power at maximum R.P.M.	130 B.H.P.
Weight complete	1090 lbs.
Fuel used	Persian Gas Ltd. Longley Farm, Epsom
Aircraft	Wattland Wapiti
Constructors	Wattland Aircraft Works, Thetford
Date	11th May 1934
Place	Wool
<b>Performance</b>	
Altitude	Metres 8370 Feet 27,453
G. Hillman (Entrant) G. Hillman (Secretary)	

**PERFORMANCE:** The certificate issued by the R.Ae.C. in connection with the Bristol "Phoenix" altitude record.

### Reversible Propellor

Mr. Seth Hart, of Los Angeles, has produced a variable pitch propellor which can be adjusted through 360 degrees—giving even reverse thrust.

### In Manchoukuo

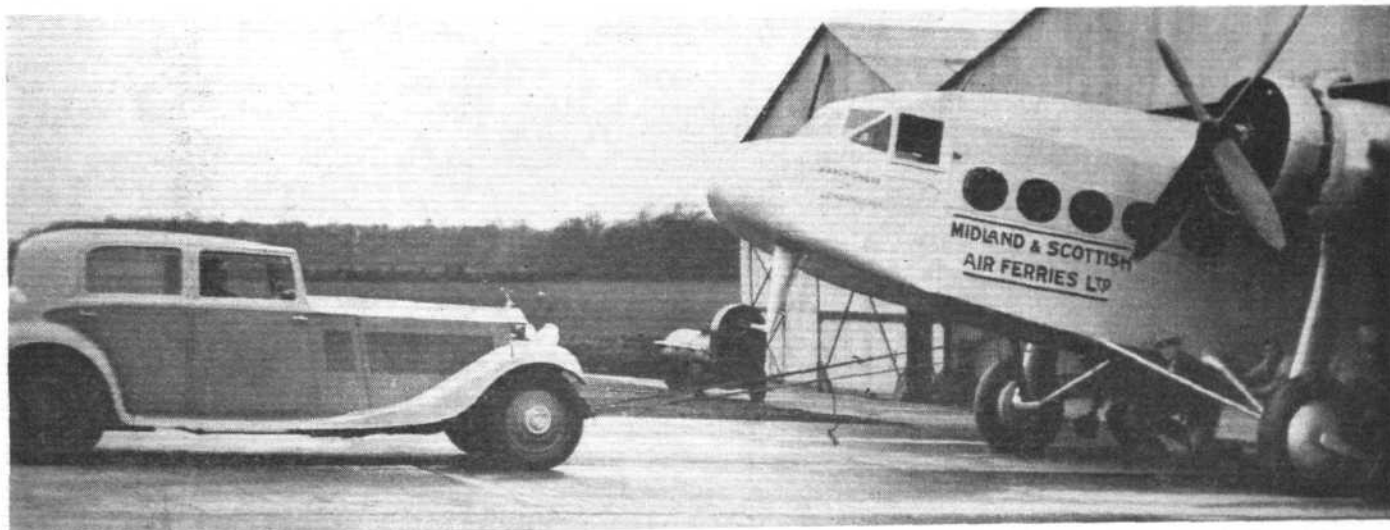
Two Fokker passenger monoplanes have been built, under licence, by the Manchurian Aviation Co. These are the first aircraft ever built in Manchoukuo, and are constructed almost entirely of local materials. The engines are of the Japanese Nakajima "Kotobuki" air-cooled type of 460 h.p.

### Italian Awards

For the encouragement of sport, the Head of the Italian Government personally awarded gold, silver and bronze medals to 142 winners in the Via dei Trionfi recently. Among those given for aviation, were gold medals to Renato Donati, for his world's height record; to Carina Negrone, Eng. Fario Niclot, and Capt. John Zappetta, for various class height records.

### Faster Air France

As a result of wind tunnel experiments it has been possible to obtain an increase of speed in the "Golden Clipper" (Wibault-Penhoet 282 T12) type used by Air France on the London-Paris and other airways. The principal structural modifications are the addition of spats on the wheels and the cowlings-in of the nose engine. A net increase in speed of 5 m.p.h. is claimed. The modifications are not being made in existing machines, but are incorporated in new types as delivered—two of which are already in service on the London-Paris route.



**HELPING HAND:** Mr. Hillman uses his Rolls-Royce as a Tractor to bring out the M. & S.A.F. Avro 642 on to the tarmac.

## Diary of Forthcoming Events

Club Secretaries and others are invited to send particulars of important fixtures for inclusion in this list:

- July 3-9. 4th International Congress for Applied Mechanics, Cambridge.
- July 8. French International 12-Hours Reliability Trial.
- July 8. Competition for Model Aircraft, Great West Road Aerodrome.
- July 13-14. King's Cup Race. Start and finish at Hatfield.
- July 21. Round the Isle of Wight Air Race.
- July 21-22. French Grand Prix.
- July 28. Bristol and Wessex Ae.C. Garden Party.
- July 29. London-Sherburn Race (York County Aviation Club).
- Aug. 11. London-Newcastle Race (Newcastle-on-Tyne Ae.C.).
- Aug. 15. Air Tour of Italy.
- Aug. 17-Sept. 6. Copenhagen Aero Show.
- Aug. 18. Cotswold Aero Club Air Rally and Garden Party.

- Aug. 25. Liverpool and District Ae.C. Garden Party, Speke Aerodrome.
- Aug. 28-Sept. 16. International Touring Competition, Poland.
- Sept. 1-2. Cinque Ports Flying Club International Rally, Lympne.
- Sept. 8. Official Opening of Wallsall Aerodrome.
- Oct. 6. London-Cardiff Air Race and Cardiff Ae.C. Air Pageant and Dance.
- Oct. 7. Aviation Golf Meeting, Royal Porthcawl Golf Club, Porthcawl.
- Oct. 20. England-Australia Race for MacRobertson Prize.
- Nov. 16-Dec. 2. 14th International Aviation Exhibition, Grand Palais des Champs-Élysées, Paris.

# THE KING'S CUP RACE

*We give below a list of Heats for Round 1 of the King's Cup Race to be flown on Friday, 13th July, 1934*

## FIRST HEAT

RACING No.	AIRCRAFT	PILOT
1.	"Moth" ("Gipsy Major")	T. A. K. Aga
2.	T.K.1 ("Gipsy III")	G. R. de Havilland
3.	"Swift" ("Gipsy Major")	A. H. Cook
4.	"Leopard Moth" ("Gipsy Major")	A. Henshaw
5.	"Tomtit" (Wolesey A.R.9 Mk. IA)	W. H. Sutcliffe
6.	"Tomtit" (Wolesey A.R.9 Mk. IA)	Wing-Com. J. W. Woodhouse
7.	"Tomtit" (Wolesey A.R.9 Mk. IIA)	G. E. Lowdell
8.	"Kite" ("Niagara")	Flt.-Lt. E. A. Healey

## SECOND HEAT

RACING No.	AIRCRAFT	PILOT
9.	"Fox Moth" ("Gipsy Major")	H. F. Broadbent
10.	"Leopard Moth" ("Gipsy Major")	T. W. Morten
11.	"Leopard Moth" ("Gipsy Major")	F/O. J. Beaumont
12.	"Martlet" ("Gipsy I")	H. R. A. Edwards
13.	Monospar S.T.4 (2 Pobjoy "R")	A. C. M. Jackaman
14.	"Swallow" ("Cataract")	E. G. Hordern
15.	Monospar S.T.10 (2 "Niagara")	Flt.-Lt. H. M. Schofield

## THIRD HEAT

RACING No.	AIRCRAFT	PILOT
16.	"Leopard Moth" ("Gipsy Major")	V. G. Parker
17.	B2 Trainer ("Hermes IVA")	Flt.-Lt. H. M. David
18.	"Swift" (Pobjoy "R")	Flt.-Lt. R. P. P. Pope
19.	"Mew Gull" ("Gipsy Six")	E. W. Percival
20.	"Hawk M2" ("Gipsy Six")	Sir Charles Rose
21.	Desoutter Mk. I ("Hermes II")	Flt.-Lt. J. B. Wilson
22.	"Mouse" ("Gipsy Major")	Flt.-Lt. C. S. Staniland

## FOURTH HEAT

RACING No.	AIRCRAFT	PILOT
23.	"Tiger Moth" ("Gipsy Major")	Peter J. de Havilland
24.	"Puss Moth" ("Gipsy III")	O. Cathcart Jones
25.	"Heck" ("Gipsy Six")	G. W. Ferguson
26.	"Gull" ("Javelin")	J. D. Kirwan
27.	"Hobo" (Pobjoy "R")	A. L. T. Naish
28.	"Leopard Moth" ("Gipsy Major")	S. W. Sparkes
29.	"Gull" ("Gipsy Six")	Flt.-Lt. H. H. Leech

## FIFTH HEAT

RACING No.	AIRCRAFT	PILOT
30.	"Coupe Moth" ("Gipsy Major")	G. de Havilland
31.	Monospar S.T.6 (2 "Niagara")	C. E. Gardner
32.	"Moth" ("Gipsy II")	D. Shields
33.	"Gull" ("Gipsy Six")	Capt. W. L. Hope
34.	"Moth" ("Gipsy III")	L. Lipton
35.	"Swift" (Pobjoy "R")	S. P. Symington
36.	"Streak" ("Gipsy Major")	Flt.-Lt. N. Comper

## SIXTH HEAT

RACING No.	AIRCRAFT	PILOT
37.	"Courier" ("Rapier")	Air Vice-Marshal A. E. Borton
38.	Monospar S.T.4 (2 Pobjoy "R")	R. G. Cazalet
39.	"Eagle" ("Gipsy Six")	A. C. S. Irwin
40.	Hendy "302" ("Hermes IV")	C. S. Napier
41.	"Hawk" ("Cirrus III")	Mrs. G. Patterson
42.	"Hawk" ("Gipsy IIA")	Thomas Rose
43.	"Dragon Six" (2 "Gipsy Six")	Capt. H. S. Broad

# THE ENGLAND-AUSTRALIA RACE

## More News of Entries

**W**ILEY POST, who has entered a "Wasp"-powered Lockheed "Vega" for the MacRobertson race is equipping his machine for some real high-altitude flying. With two superchargers and an airtight flying suit, he expects to fly over some of the storms which might impede entrants flying at lower levels. He expects a cruising speed of more than 275 m.p.h. at the height at which he will fly.

Sir Charles Kingsford-Smith expected to take delivery of his Lockheed "Altair" (supercharged "Wasp") late in June. This machine will carry 500 gallons of fuel and have a range of more than 3,500 miles at a cruising in excess of 200 m.p.h.

*West Wind*, a Lockheed "Orion" owned by Varney Speed Lines, has been taken off the Lineas Aereas Occiden-

tales service and is being reconditioned for the race, in which it will be flown by Capt. Franklin Rose and Mr. Walter T. Varney.

The Beechcraft A.17F entered by Miss Louise Thaden is a biplane of typical Beech design with a Wright "Cyclone" engine of 690 h.p. Particulars of the performance of the machine, as it will be flown in the race, are not yet available, but the standard A.17F has a top speed of 235 m.p.h., cruises at 212 m.p.h. and lands at 60 m.p.h. With normal tankage the cruising range is 750 miles. At sea level the rate of climb is 3,000 ft. per minute and the service ceiling is reported to be 32,000 ft.

The Potez entered by M. Freton appears to be a high-wing monoplane observation type, with a Lorraine "Petrel" engine.



**A DISTINCTIVE AMERICAN ENTRY:** The Beechcraft A.17F entered by Miss Louise Thaden. It is fitted with a 690 h.p. Wright "Cyclone" engine, and, as will be seen, considerable attention has been given to the streamlining. The top plane has a big backward stagger, although this is not very apparent in our illustration.



# COMMERCIAL AVIATION

## — AIRLINES — AIRPORTS —

### AN AMERICAN FEEDER-LINE MACHINE

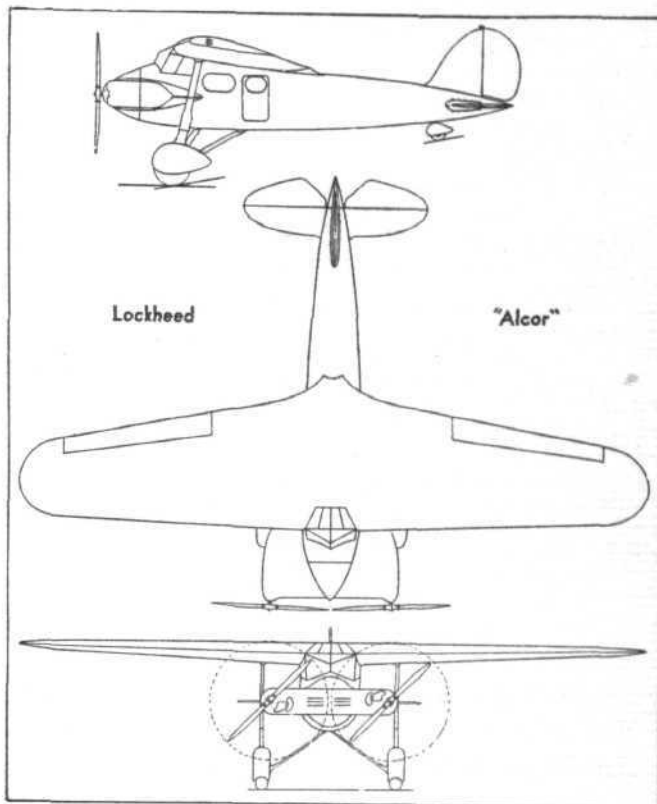
*The Lockheed "Alcor" follows "Vega" Lines, but has Two Menasco Engines*

**M**R. ALLAN LOCKHEED, who was, at one time, connected with the Lockheed Aircraft Corporation, has been working for two or three years perfecting the design of a high-wing monoplane equipped with two Menasco engines mounted in an unusual manner. The machine is now out of the experimental stage, and is regarded as an efficient feeder-line aircraft.

The cantilever wing, fuselage and empennage are plywood structures, and the general layout of wing and fuselage closely resembles that of the Lockheed "Vega." The cabin is 8 ft. 10 in. long, 51 in. high and 40 in. wide, and there is a total baggage space of 40 cu. ft. Four passengers are accommodated in addition to the pilot and co-pilot, but this number may be increased to eight.

Hydraulic shock absorbers are used in the vertical struts of the landing gear, which run to the front main spar. Low-pressure wheels, faired with "spats," and a streamlined tail wheel are employed.

Two 6-cylinder air-cooled supercharged Menasco "Buccaneer" engines, giving 230 h.p. each, are mounted in a horizontal position with their airscrew hubs 93 in. apart. Hamilton standard controllable-pitch metal airscrews, 7 ft. 6 in. in diameter, are employed. The oil tanks are built into the space between the engines. It is

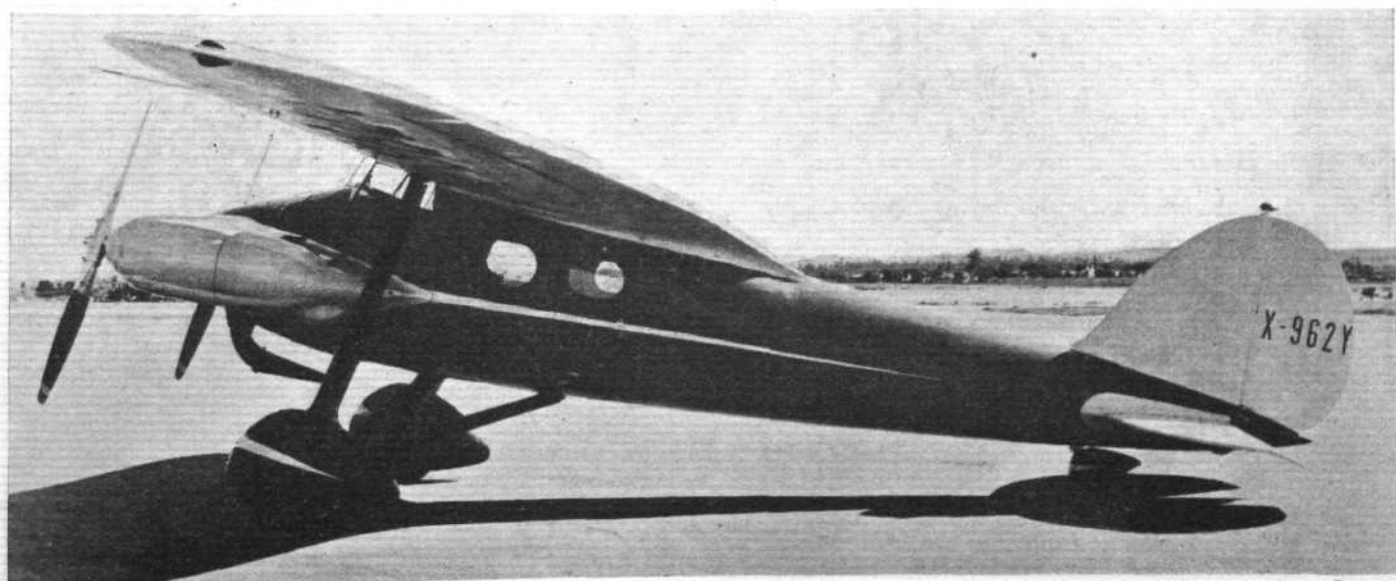


**LOCKHEED "ALCOR"**  
2 MENASCO "BUCCANEER" ENGINES

		Dimensions	
Wing span ..	..	42 ft. (12.81 m)	
Length ..	..	28 ft. 5 in. (8.66 m)	
Height ..	..	9 ft. 6 in. (2.90 m)	
Wing area ..	..	282 sq. ft. (26.19 sq. m)	
Weight, empty ..	..	2,665 lbs. (1 210 kg)	
		Weights	
Useful load ..	..	2,045 lbs. (927.59 kg)	
Pay load ..	..	1,200 lbs. (545 kg)	
Wing loading ..	..	16.7 lbs./sq. ft. (81.5 kg/sq. m)	
Power loading ..	..	10.2 lbs./h.p. (4.65 kg/cv)	
		Performance	
Cruising speed ..	..	157 m.p.h. (253 k.p.h.)	
Maximum speed ..	..	183 m.p.h. (294 k.p.h.)	
Landing speed ..	..	57 m.p.h. (92 k.p.h.)	
Climb, at sea level ..	..	1,400 ft./minute (427 m/minute)	
Ceiling with maximum load ..	..	19,000 ft. (5 795 m)	
Ceiling on one engine ..	..	6,400 ft. (1 952 m)	
Range at cruising speed ..	..	700 miles (1 125 km)	
Fuel consumption at cruising speed ..	..	16.66 galls./hr. (75.7 litres/hr)	
Oil consumption at cruising speed ..	..	1 quart/hr. (0.95 litre/hr)	

claimed that the vibration impulses of one engine oppose those of the other, and Menasco engines are known to be particularly smooth. It is possible to remove the entire engine group, with oil tanks, as one unit.

During recent demonstration flights it was proved that the machine can take off and climb at the rate of 400 ft. a minute from sea level on one engine. When the starboard airscrew was removed the machine took off after a 1,200-ft. run and reached a speed of 130 m.p.h. in horizontal flight. Furthermore, the pilot reported that it handled in a similar manner to a conventional single-engined aircraft.



FOR FEEDER LINES: The Lockheed "Alcor" high-wing monoplane.

## CROYDON

*Visitors for the R.A.F. Display : Heavy Week-end Isle of Wight  
Traffic : "Frozen" Aviation Ideas and Backward Reporters*

**T**HE Air Force Display has brought Croydon an assortment of unusual traffic during the past week. Over the week-end the airport housed machines of about a dozen different nationalities. Amongst them were Dutch and Belgian military Fokkers, an Italian Savoia which brought Gen. Valle, Under-Secretary of State for Air, a French machine flown in by the Director of Civil Aviation for France, and three Lithuanian military machines with Bristol "Pegasus" engines, which brought a small party of uniformed officers headed by the Lithuanian Director of Military Aviation. Some excitement was caused at Croydon because this aeroplane dropped in without any previous advice, and the authorities here had no idea what it was all about. Most of the heads of Continental civil aviation companies also arrived during the week by the various airlines. Amongst others were Mr. Anthony Fokker and Mr. A. Plesman (K.L.M.) and Capt. Carl Florman (A.B.A., Sweden). From the Netherlands Indies, via Holland, came Dr. Groenevelt Meyer, Director of Civil Aviation in the Indies. He is on a "busman's holiday" and is in consultation with the Air Ministry, and is also intimately concerned with arrangements at his end for the MacRobertson Trophy Race.

Week-end traffic to and from the Isle of Wight has become exceptionally heavy, especially since the fare reduction. So great was the rush last Saturday that Spartan Air Lines, Ltd., could not cope with it, and an "Argosy" was chartered from Imperial Airways. Several times recently both K.L.M. and Sabena services have had to be duplicated.

Prince Gustav Adolf of Sweden left by Scandinavian Air Express on Saturday, after competing at the International Horse Show, and Mr. "Bill" Ledlie, of Olley Air Service, Ltd., has recently returned from a European tour with an

American client who owns a couple of aeroplanes at home—a "Bellanca" and a "Northrop." This gentleman, incidentally, has not been in a train for six years! On the other hand, I recently met a prominent London business man whom nothing would induce to set foot in an aeroplane. His ideas on the whole subject of flying had apparently frozen solid in about 1912.

Aviation moves too quickly for some of our newspapers also. Mr. Hearst's K.L.M. pilot, while flying from Madrid to England, found the English coastal weather such that he decided to use an alternative landing ground, Littlestone. He did this in agreement with his Croydon headquarters and with his passenger. One of our newspapers, unaware that this is a routine procedure in bad weather, headed a paragraph "Mr. Hearst's Air Mishap," another called it an "Air Thrill," and concluded naively, "the machine was undamaged." Would the same scribe, on hearing that a liner captain had decided to put in at Plymouth because Southampton was fogbound, regard it as a thrill, and add "the vessel was not wrecked"?

Another example of the fact that aviation is moving too fast for old-established institutions was given on one of the Olley tours, when the pilot, flying from town to town in Europe, had to make the following daily changes of currency:—Sterling, guilders, marks, Danish kroner, Swedish kroner, marks, French francs, Swiss francs, French francs, lira, French francs, and again sterling!

I am told that K.L.M. figures for passenger traffic in May were 161 per cent. better outwards from Croydon, and 134 per cent. better inwards, than in May, 1933, and that so far, over the year 1934, the passenger increase has been close on 100 per cent. In June this year there were 10,300 passengers in and out of Croydon.

A. VIATOR.

## HESTON

*An International Week-end : The Bienvenue Aerienne : Armstrong-Siddeley Service : Catching the Boat*

**F**IFTY well-known civil pilots and aviation personalities from the Continent gathered at Heston on Friday. They were the guests of the Hospitality Committee of the Royal Aero Club, and spent the night of their arrival at the Park Lane and Grosvenor House Hotels before witnessing the Display. Afterwards they were entertained at various country houses.

A number of private aeroplane owners left Heston on June 23 to attend the second French "Bienvenue Aerienne." Among the participants were Lady Young, Mr. Gordon Selfridge, Junr., Miss Crossley, Mr. Prior Palmer, Mr. Westhead, Mrs. Alan Butler, Mrs. Cleaver, Mr. Alan Muntz, Mr. and Mrs. Crammond, and Mr. and Mrs. Roderick Denman.

The enterprising party of Bombay flying pupils arrived in three D.H. "Moths" on June 26, under the guidance of their instructor, Flt. Lt. Binley.

Mr. Willoughby Norman, a brother of the Chairman of Airwork, Ltd., was married in London on June 26 to Miss Boot, a daughter of Lord Trent. They later left Heston in Mr. Nigel Norman's "Leopard Moth" for a Paris honeymoon.

The two years' course at the Chelsea College of Aeronautical Engineering, which includes theoretical and practical instruction in London and at Brooklands, will now conclude with six months' practical training in the Heston workshops.

Heston will shortly go "automatic" by transferring to the Hounslow exchange, which is included in the dialling area around London. The new number may be memorised

without pencil or pelmanism; it is Hounslow 2345. The change is likely to be towards the end of July.

An arrangement has been arrived at by which Airwork, Ltd. are to become the official Armstrong-Siddeley service and repair agents for the South of England. Overhaul tool kits and stocks of spares will be held, and they will be fully equipped to carry out complete overhauls and repairs on all types of Armstrong-Siddeley aero engines.

Mr. H. A. Lindemann, a cavalry officer in the Swiss Army, who learned to fly with the associated Egyptian company in 1932, is taking the tests for his commercial licence with the Airwork School at Heston.

The British Air Navigation Co. traffic office was about its usual business on Thursday morning, when a lorry driver arrived, a little breathless, leading a tearful German lady by the hand. It seemed that she had been hurrying along the Great West Road in an effort to catch the s.s. *Hambourg*, sailing from Southampton at 11 a.m., when her car collided with a lorry. Desperately she consulted the lorry driver, who suggested Heston as the solution. They arrived at B.A.N.C.O.'s office at 10.10 a.m., and seven minutes later she was in the air in the Percival "Gull" reserved for such occasions. It had taken the B.A.N.C.O. staff no more than seven minutes to arrange the flight, make arrangements with the Eastleigh (Southampton) aerodrome to have a fast car awaiting the arrival of the plane, and also arrange with the steamship line to hold a special tender in case of need. The lady caught the boat.

The traffic figures for the month were:—Passengers, 206; flights, 61; miles, 13,718.

### TEN VULTEES FOR AMERICAN AIR LINES

AMERICAN AIR LINES (late American Airways) has ordered ten V-1A aircraft from the Airplane Development Corporation. These machines are improved versions of the V-1 described in FLIGHT for March 22, 1934.

### ARGENTINE AIRWAYS

A SYSTEM of airways across Argentina, with extensions to Paraguay and Chile, has been proposed by the Argentine Director-General of Civil Aviation, in collaboration with the post and telegraph authorities.





**FOR FREIGHT WORK :** Wrightson & Pearse, of Heston, are to use a Vickers "Vellox" (two "Pegasus") on special freight work. The "Vellox" carries a load of 5,300 lb. and has a maximum speed of 160 m.p.h.

#### LISBON-TANGIER SERVICE

A SUBSIDIARY company of Air-France has been formed in London, and this will shortly open a weekly mail service between Lisbon and Tangier to link with the South American air mail.

#### A NEW RUSSIAN TRANSPORT PLANE

THE Soviet Civil Aviation Scientific Research Institute is reported to have lately completed the construction of a new amphibian aeroplane designed by V. N. Sharov. The new machine accommodates fourteen passengers and is equipped with two 480-h.p. engines, from which a speed of nearly 140 m.p.h. and a range of 1,250 miles is anticipated. It is so designed as to be able to operate from land, water, snow or ice, and for this reason is adapted for use in the Arctic regions.

#### AMERICAN TRANSCONTINENTAL SERVICES

UNITED AIR LINES, the American air transport company which operates the 2,726 miles New York-Los Angeles air route, in competition with Transcontinental & Western Air, has published the following figures relating to the acceleration on its services on this route since 1927—the figures given being the number of hours taken for the journey:—

1927	1928	1929	1930	1931	1932	1933
30½	29½	29½	29½	27½	27½	19½

Owing to the cancellation of the postal contracts, a further acceleration is at present impossible.

#### THAT BERLIN-SHANGHAI SERVICE

ACCORDING to a recent statement by Mr. Huang Nai-Shu, Director-General of the Chinese Postal Service, the long-awaited air service linking Berlin with China is ready to start operations any moment now—as soon, in fact, as the tribal fighting in Chinese Turkestan is over! The service will run from Shanghai, through Chinese Turkestan, Russia, and terminate at Berlin, where connection will be made with other parts of Europe. It will be operated by the Europasia Corporation with German pilots—and, presumably, German machines.

#### IN EGYPT

A TOTAL of 213 passengers was carried on the regular air services of Mistr-Airwork during the period June 12-18, as follows:—Alexandria Service, 165; Egypt-Palestine, 28; Port Said, 14; Mersa Matruh, 6.

#### RAILWAY AIR SERVICES

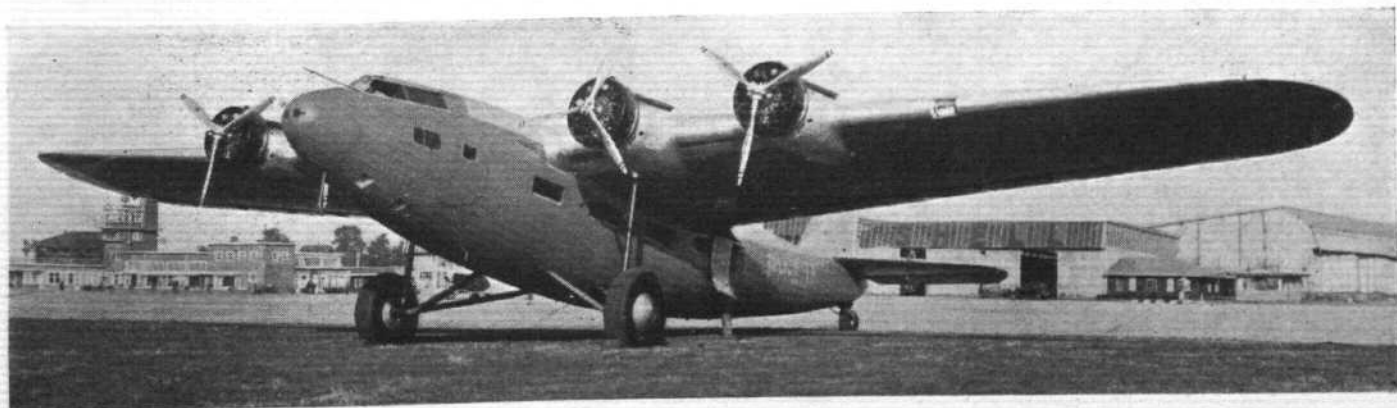
NEW reduced fares for the Railway Air Service operated between London and the Isle of Wight have just been introduced for the summer holiday period. The fares (which include free road conveyance between Victoria and Croydon and between Bembridge Aerodrome and Bembridge, Ryde, Sandown and Shanklin, or between Somerton Aerodrome and Cowes) are now 19s. 6d. for the single journey and 38s. 6d. return.

#### A COLOMBO AERODROME

THE Ceylon State Council have approved the establishment of an aerodrome at Ratmalana, near Colombo. When the project is completed, Croydon will be brought three days nearer to Ceylon with the assistance of the Tata service from Bombay.

#### LOCKHEED NEWS

SEVEN "Electras" (two "Wasp Juniors") have been ordered from the Lockheed Aircraft Corporation by Mr. Anthony Fokker. Mr. Fokker originally purchased one aircraft of this type, but increased the order to seven when the estimated performance figures had been attained, and bettered, in actual tests. "Electras" have also been ordered by Northwest Airlines and Aerovias Centrales, which company is affiliated to Pan-American Airways. Other purchasers of "Electras" include the Phillips Petroleum Company and Mr. Walker P. Inman, a well-known American sportsman. It has been proved in the wind tunnel, and by actual flight tests, that the "Electra" is about 2 m.p.h. faster without her wing-root fillets. When these are removed, control remains substantially the same, but stability is slightly improved. Approximately 32 lb. in weight are saved.



**SOMETHING LARGE AND NEW :** Here is the recently-completed Fokker F.XXXVI 32-passenger monoplane for K.L.M., fitted with four Wright "Cyclone" engines. Actual performance figures are not yet available, but the estimated top speed is 168 m.p.h. and the cruising speed 142 m.p.h. The range at cruising speed is expected to be about 870 miles.

# THE ROYAL AIR FORCE



London Gazette, June 26, 1934

## General Duties Branch

W. D. Woods is granted a permanent commn. as Pilot Officer with effect from June 7, and with seny. of June 7, 1933; Pilot Officer on probation E. C. Kidd, A.F.M., is confirmed in rank (April 10); Pilot Officer E. D. MacK. Nelson is promoted to the rank of Flying Officer (June 17).

The follg. Squadron Ldrs. are granted the acting rank of Wing Comdr. (unpaid) with effect from June 1, while appointed to the directing staff of the Royal Air Force Staff College:—D. Colyer, D.F.C., p.s.a.; H. E. P. Wigglesworth, D.S.C., p.s.a.; A. L. Fiddament, D.F.C., p.s.a.

Flt. Lt. J. J. Lloyd-Williams, M.C., is placed on the retired list (June 23); the short service commn. of Acting Pilot Officer on probation A. W. Simons is terminated on cessation of duty (June 23).

## Accountant Branch

Pilot Officer on probation R. E. L. Hart is confirmed in rank and promoted to the rank of Flying Officer (June 7).

## Medical Branch

Flt. Lt. D. Loughlin, M.R.C.S., L.R.C.P., is transferred to the Reserve, Class D (June 27).

## ROYAL AIR FORCE RESERVE RESERVE OF AIR FORCE OFFICERS

### General Duties Branch

The follg. are granted commns. as Pilot Officers on probation in Class AA (i):—R. Bennett (June 6); J. N. Addinsell, FitzE. J. Evered, G. R. Mack (June 8).

Flt. Lt. P. G. Tweedie is transferred from Class C to Class A (May 16); F/O. T. P. Mulcahy is transferred from Class AA (ii) to Class DD (May 22); F/O. H. S. Robertson is transferred from Class A to Class C (June 3); F/O. the Hon. J. Grimston is transferred from Class AA (ii) to Class C (June 23); F/O. J. A. Greenshields is transferred from Class C to Class A (May 19) (substituted for the notification in the Gazette of June 19); P/O. D. L. Rawnsley is transferred from Class C to Class AA (ii) (May 2); the notification in the Gazette of June 13, 1933, concerning Flt. Lt. C. N. C. Dickson, A.F.C., is cancelled. Flt. Lt. A. N. Kingwill relinquishes his commn. on completion of service and is permitted to retain his rank (May 15); P/O. on probation R. K. Curzon relinquishes his commn. on appointment to a commn. in the Special Reserve (June 14).

## SPECIAL RESERVE

### General Duties Branch

R. K. Curzon is granted a commn. as Pilot Officer on probation (June 14) F/O. R. Heathcote resigns his commn. (May 6).

## AUXILIARY AIR FORCE

### General Duties Branch

No. 601 (COUNTY OF LONDON) (BOMBER) SQUADRON.—F/O. the Hon. W. D. S. Montagu resigns his commn. (Feb. 12).

No. 602 (CITY OF GLASGOW) (BOMBER) SQUADRON.—F/O. B. C. H. Ogilvie resigns his commn. (May 14).

No. 607 (COUNTY OF DURHAM) (BOMBER) SQUADRON.—S. W. Kaye is granted a commn. as Pilot Officer (June 1).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

Wing Commander R. H. Kershaw, to Station H.Q., Pembroke Dock, 20.5.34, to command.

**Squadron Leaders:** G. M. Bryer, O.B.E., A.F.C., to D. of O., Dept. of Chief of the Air Staff, Air Ministry, 6.6.34. B. J. Silly, M.C., D.F.C., to H.Q., Iraq, 11.6.34, for Special duty (Air Staff). R. P. M. Whitham, O.B.E., M.C., to No. 6 (Army Co-operation) Sqn., Old Sarum, 18.6.34, to command vice Sqd. Ldr. J. R. I. Scambler, A.F.C.

**Flight Lieutenants:** I. G. E. Dale, to No. 501 (City of Bristol) (B.) Sqn., Filton, 6.6.34. S. Upton, to R.A.F. Depot, Middle East, Aboukir, 2.6.34. R. W. Hill, to No. 201 (F.B.) Sqn., Calshot, 3.6.34. A. F. Britton, to Station H.Q., Upavon, 13.6.34. K. F. T. Pickles, to No. 203 (F.B.) Sqn., Basrah, Iraq, 11.6.34. W. E. Staton, M.C., D.F.C., to No. 501 (City of Bristol) (B.) Sqn., Filton, 18.6.34. G. H. Loughnan, to No. 32 (F.) Sqn., Biggin Hill, 6.6.34. N. V. Wrigley, to Station H.Q., Manston, 20.6.34. V. D. Morshead, to Station H.Q., Amman, 5.6.34.

**Flying Officers:** W. B. Bailey, to Electrical and Wireless School, Cranwell, 13.6.34. M. E. C. Smart, to R.A.F. Base, Leuchars, 4.6.34, on appointment to a temp. commn., on being seconded from the Army. A. D. Selway, to No. 602 (City of Glasgow) (B.) Sqn., Abbotsinch, 12.6.34. C. A. Watt, to No. 201 (F.B.) Sqn., Calshot, 3.6.34. J. J. Zwarenstein, to No. 204 (F.B.) Sqn., Mount Batten, 3.6.34. C. C. McMullen, to No. 203 (F.B.) Sqn., Basrah, Iraq, 11.6.34. K. N. Sayers, to R.A.F. Base, Gosport, 2.6.34. R. S. Ryan, to No. 803 (F.F.) Sqn., 16.6.34. F. B. H. Hayward, to Armament Training Camp, Leuchars, 24.5.34. W. C. Pitts, to No. 1 Armament Training Camp, Catfoss, 10.5.34. C. F. M. Rambaut, to No. 820 (F.S.R.) Sqn., 25.6.34. R. F. Smith, to No. 28 (A.C.) Sqn., Ambala, India, 25.5.34. L. E. B. Stonhill, to No. 2 Armament Training Camp, North Coates Fitties, 23.5.34.

**Pilot Officers:** J. F. H. du Boulay, to No. 15 (B.) Sqn., Abingdon, 9.6.34. C. H. Brandon, to No. 204 (F.B.) Sqn., Mount Batten, 3.6.34. C. J. P. Flood, to No. 209 (F.B.) Sqn., Mount Batten, 3.6.34. L. B. B. King, to No. 201 (F.B.) Sqn., Calshot, 3.6.34. K. D. Stanion, to No. 201 (F.B.) Sqn., Calshot, 3.6.34. D. E. B. Wheeler, to No. 201 (F.B.) Sqn., Calshot, 3.6.34. M. K. D. Porter, to No. 824 (F.S.R.) Sqn., 16.6.34. N. Hope, to No. 820 (F.S.R.) Sqn., 25.6.34.

Acting Pilot Officer G. T. Gilbert, to No. 3 Flying Training School, Grantham, 8.6.34, on appointment to a short service commn.

### Accountant Branch

Wing Commander J. Rylands, to R.A.F. Depot, Uxbridge, 14.6.34, for Accountant duties.

Flight Lieutenant A. C. Lobley, to Station H.Q., Upavon, 14.6.34.

Flying Officer R. J. Wishlade, to Station H.Q., Biggin Hill, 18.6.34.

**Pilot Officers:** The following Pilot Officers are posted to H.Q., R.A.F., Cranwell, on 9.6.34, on appointment to permanent commns.:—R. C. S. Allin, A. Gollan, and W. N. Hibbert.

### Medical Branch

Wing Commander H. B. Porteous, to H.Q., Inland Area, Stanmore, 29.6.34, for duty as Deputy Principal Medical Officer, vice Wing. Com. W. A. S. Duck.

Flying Officer V. D'A. Blackburn, to Station H.Q., North Weald, 14.6.34.

### Chaplains Branch

Rev. R. D. Grange-Bennett, to R.A.F. Base, Calshot, 16.6.34, for duty as Chaplain (C. of E.).

## THE LATE SQUADRON LEADER STANLEY B. COLLETT

WE desire to offer our deep sympathy to the family of Sqd. Ldr. S. B. Collett, who was killed in an air accident at Hendon on Saturday, June 30.

He was the son of Sir Charles Collett, Lord Mayor of London, and of Lady Collett, and was married. In civil life he was assistant secretary of the Great Western Railway Co., and was chiefly responsible for the starting of the railway's air service between Cardiff and Plymouth. He was also the representative of that company on the board of Railway Air Services.

During the war, Sqd. Ldr. Collett was a pilot in the Royal Flying Corps and Royal Air Force, and in September, 1918, was awarded the French Croix de Guerre. On the formation of the Auxiliary Air Force he was granted a commission in No. 601 (County of London) (Bomber) Squadron, then commanded by the late Lord Edward Grosvenor, and rose to be senior flight lieutenant in that squadron. In 1931, when Air Commodore the Hon. F. E. Guest relinquished the command of No. 600 (City of London) (Bomber) Squadron, Collett was chosen on his merits to succeed him. He thus had the closest connection with both the London Auxiliary squadrons, and both are thrown into mourning by his death. The efficiency of both these squadrons has always amazed those who have

seen their work, and no small share of the credit is due to Sqd. Ldr. Collett. He was a gallant and able officer who served his country well in peace and war, and he died performing his duty. The tradition which he helped to create will not die with him. His good work will survive him, and his name will not be forgotten.

A military funeral at St. Paul's Cathedral has been accorded to the body.

The King sent the following message to the Lord Mayor and Lady Mayoress:—

"The Queen and I are greatly distressed to learn of the fatal accident to your son. We send you and the Lady Mayoress our deep sympathy in your irreparable loss.

(Signed) "GEORGE R.I."

The Prince of Wales sent the following message by telephone from the aerodrome:—

"Am much distressed at the terrible accident. My deepest sympathy to you both."

Messages of sympathy were also received from the Duke and Duchess of York, Prince George and Prince Arthur of Connaught.



## SERVICE NOTES

### Nomenclature of Aeroplane

THE official name of the "Osprey" aeroplane with metal airscrew, flotation dinghy installed in top starboard plane, and engine-driven generator, is "Osprey III."

### Nomenclature of Aero-engine

THE official name of the "Gipsy" engine, with cylinders 4 mm. larger in the bore than those of the "Gipsy III" engine, is "Gipsy Major I."

### No. 4 Flying Training School, Abu Sueir

THE undermentioned officers and airman pilots have been awarded special assessments, as shown hereunder, on completion of a course of *ab initio* flying training at No. 4 Flying Training School.

*Special Distinction.*—560813 A/Sgt. Hastings, H.G.

*Distinguished Pass.*—561602 A/Sgt. Ovenden, A., A/Pilot Officer Richardson, F. C., 561615 A/Sgt. Perry, C. D., A/Pilot Officer Boulton, N. de W., 366032 A/Sgt. Blackburn, J.

### The Royal Air Force Dinner Club

THE 12th Annual Dinner was held on Friday, June 29, 1934, at the Connaught Rooms.

Air Chief Marshal Sir Edward Ellington, K.C.B., C.M.G., C.B.E., presided.

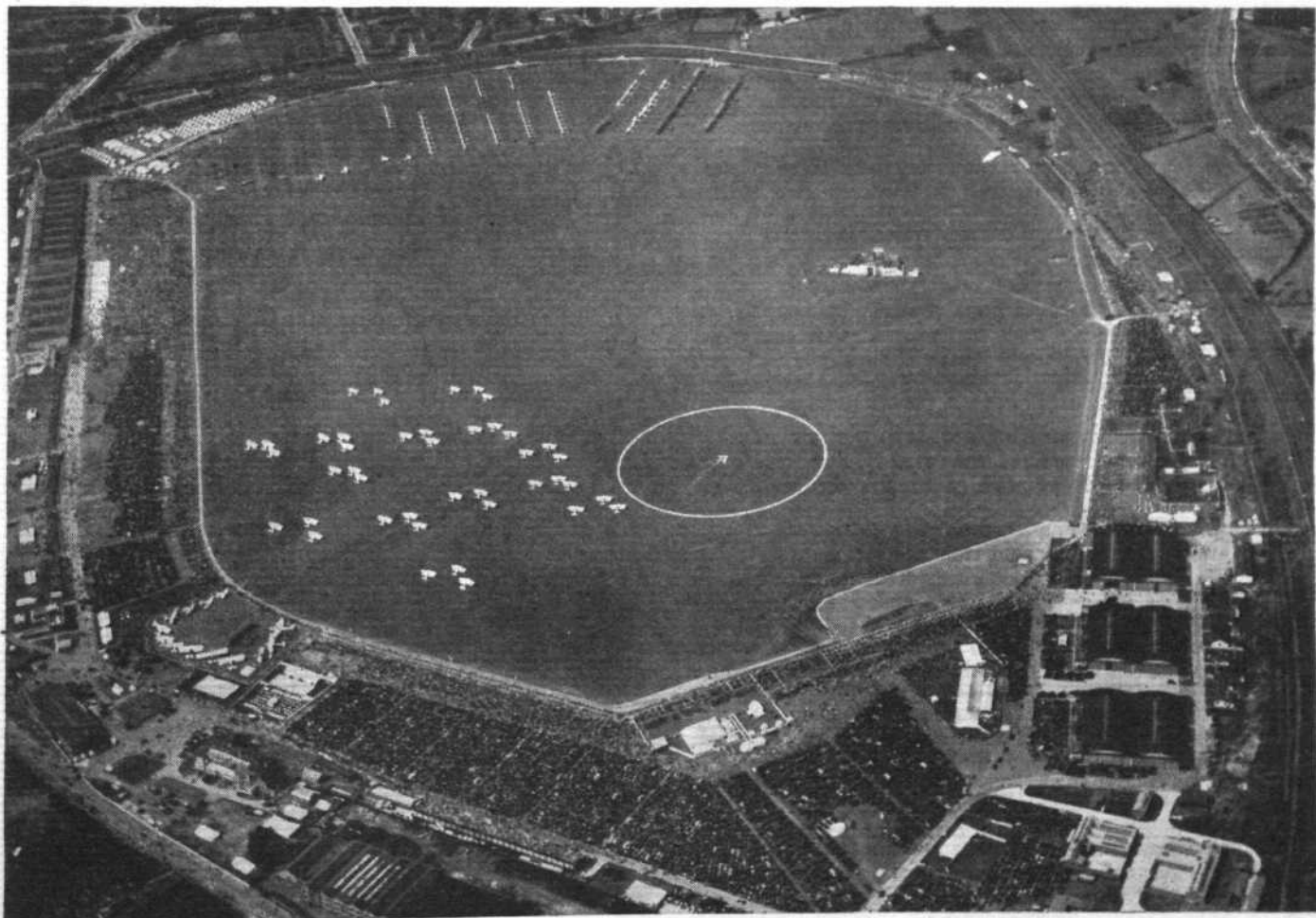
About 170 members dined together, including:—Marshals of the Royal Air Force The Lord Trenchard and Sir John Salmond; Air Marshals Sir Robert Brooke-Popham, Sir Hugh Dowding, and Sir John Higgins; Air Vice-Marshals F. W. Bowhill, C. Longcroft, A. M. Longmore, Sir Edgar Ludlow-Hewitt, W. G. S. Mitchell, P. H. L. Playfair, and Sir Vyell Vyvyan; Air Commodores J. T. Babington, A. W. Bigsworth, C. D. Breese, C. L. Courtney, A. L. Godman, E. L. Gossage, H. R. Nicholl, L. A. Pattinson, A. D. Warrington-Morris, and W. L. Welsh.



ANTI-AIRCRAFT: A unit of the Territorial Army Anti-Aircraft equipment, which was on view outside the "Static" Exhibition. (FLIGHT Photo.)

### H.M.S. "Furious"

H.M.S. *Furious* has been detached from the Home Fleet for service with the Mediterranean Fleet until about October, 1934, and left England on June 2, 1934. The following squadrons were embarked from the stations shown:—No. 801 (F.F.) Squadron from Netheravon. No. 822 (F.S.R.) Squadron from Netheravon. No. 812 (F.T.B.) Squadron will be embarked after arrival at Malta. No. 811 (F.T.B.) Squadron will remain at the R.A.F. Base, Gosport, and correspondence for this unit will, until further notice, continue to be addressed to the unit at that station.



An aerial view of Hendon Aerodrome just before the commencement of the main programme on Saturday afternoon. The set piece can be seen on the right, while on the left the four squadrons of "Harts" are lined up before taking off. To the left front is No. 18 B.S. with No. 57 B.S. on its right rear and No. 600 B.S. to the left. No. 601 is in the rear of all.

# Correspondence.

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

## EMPIRE AIR MAILS

[2937] We air enthusiasts will not see Empire Air Service of our dreams until all first-class mails go by air.

Consequently it was a disappointment to read in your last number that the joint deputation to the P.M.G. on June 7 suggested the retention of the charge of 1½d. per oz. and the separation of mails into express and seaborne.

Would not a charge of 1½d. per ½ oz. bring in sufficient revenue and at the same time satisfy "correspondents who were not so much concerned with the saving of transit time in their correspondence as with the cost of it"? One can say a lot in a ½-oz. letter.

The Post Office have lost money on the telegraph service for years, on the ground that this service was essential to the country; surely our Empire letter service deserves the same consideration.

Mansfield Marlow,  
Bucks.

W. L. NAYLOR.

## ARMAMENT

[2938] Your "military aircraft" number of June 27 is a magnificent indication to Europe of the potential strength of the British defensive and offensive position. It will be a valuable support to British diplomats if and when they have the courage to "call the meeting to order."

The review of machine-gun details is interesting. I have noticed that the Germans—I beg their pardon, I should have said the Dornier aircraft factory at Altenrhein!—equip their single-seater interceptors in a manner very similar to that illustrated by FLIGHT. They have included, though, a "round counter" on each of the guns, which registers the number of rounds remaining to be expended. It struck one as a very useful gadget to the harassed pilot.

Another device which one noticed was the use of a fixed gun in "stern chaser" position with sighting by periscope.

It would be interesting to know whether these developments have been followed and/or tried out by British military experts.

A SPECTATOR OF THE ARMAMENTS RACKET.

London, W.1.

["Rounds counters," made by the Veeder Company, were being fitted to Vickers guns towards the end of the war. Our correspondent may rest assured that our armament experts are not unaware of the "stern chaser" gun which he mentions. This, incidentally, was another war-time idea.—Ed.]

## BRITISH v. AMERICAN AIRLINERS

[2939] I read with interest the views of C. D. Long in your correspondence column of FLIGHT for March 22, 1934.

While many of Mr. Long's calculations are correct, might I bring under his notice that the official stalling speed of the D.H. 86 is 66 m.p.h. as corrected by Capt. H. S. Broad in FLIGHT for March 1. This makes the respective speed ranges of the D.H. 86 and the Lockheed "Electra" 2.583 and 3.413. The useful gross weight ratios are 0.3999 and 0.3940 respectively, while the number of passenger miles/gallon at cruising speed—a figure illustrating the economy of a machine—are 40.28 and 39.59 respectively.

This does not make things look so bad for the D.H. 86 as Mr. Long would have them, and it must be remembered that the de Havilland firm have relatively little experience in the construction of high-speed commercial aircraft, and their "Express Airliner" is thus a creditable achievement. It might also be remembered that the machine has been built to fly over the Northern Australian section of the Sydney-London air route, and this country is recognised by some of the world's best aviators as being the most treacherous in the world.

WILLIAM D. FREEMAN.

Chatswood, N.S.W.,  
Australia.

## PREPAREDNESS

[2940] In your Editorial article on Preparedness, in the current issue of FLIGHT, you use a comparison which, though at first sight would seem to uphold your advocacy for a larger Air Force, in reality condemns it. You liken England guarded by a large Air Force to the man in the street protected by the police force. In reality, the police force should be likened to an international police force, which is one of the chief advocations of your "armchair" pacifists as a solution to the disarmament problem. When this police force is disbanded, or becomes inefficient, the nations no longer regard themselves as safe, and start to re-arm. An illustration, in miniature, of this situation is provided in America, where the police force is inefficient and gangsters not only mow down each other with machine guns, but also include non-partisan members of the community. Let the nations have arms equality, in small quantities and for internal use only, and have a strong international governing body that is prepared to use force if required.

JAMES BUCHANAN.

Stag Lane,  
Edgware, Middx.

## AIRSPPEED TO BE PUBLIC COMPANY

An agreement has been reached between Airspeed, Ltd., and Swan, Hunter & Wigham Richardson, Ltd., whereby the two firms will co-operate in the future. Airspeed, Ltd., a private company which manufactures high-speed economical aeroplanes like the "Courier" and "Envoy," will shortly be floated as a public company. The well-known shipbuilders of Wallsend, with whom they are going to co-operate, state that the arrangement will not result in the manufacture of aircraft immediately on the banks of the Tyne.

## PUBLICATIONS RECEIVED

*The Nineteenth Century and After*. July, 1934. Price 3s. London: Constable & Co., Ltd.  
*The Story of Petrol*. By C. Webber. Price 3s. 6d. net. London: T. Nelson and Sons, Ltd.  
*Brochure: Central Research Department*. Sheffield: United Steel Companies, Ltd.  
*The Aircraft Year-Book for 1934*. Vol. 16. Price \$3.00. New York: Aeronautical Chamber of Commerce of America, Inc.  
*Aeronautical Research Committee Reports and Memoranda No. 1574. Effect of Fuel Evaporation on Performance of a Centrifugal Supercharger*. By G. V. Brooke. November, 1933. Price 1s. net. No. 1580. *Frictional Drag of Flat Plates Below the Critical Reynolds Number*. By A. Fage. April, 1933. Price 6d. net. London: H.M. Stationery Office, W.C.2.  
*The Hoffman Portfolio*. Hoffman Manufacturing Co., Ltd., Chelmsford.  
*The Flying Clubs' and Schools' Year Book, 1934*. Edited by W. H. E. Thomas, with foreword by The Lord Sempill. Price 2s. 6d. net. London: Simpkin Marshall, Ltd.  
*Winged Victory*. By V. M. Yeates. Price 10s. 6d. net. London: Jonathan Cape.  
*Air Licences*. By T. Stanhope Sprigg. Price 3s. 6d. net. London: Sir Isaac Pitman and Sons, Ltd.

## NEW COMPANIES REGISTERED

**BRISTOL CHANNEL AIRWAYS, LTD.**—Nominal capital of £5,000 in £1 shares. To carry on the business of manufacturers of aeroplanes and seaplanes, machinery and engines, metal workers, machinists, metallurgists, electrical engineers, etc. The first directors (to number not less than 3 nor more than 9) are: Charles H. Keen, "Parc" Llanishen, Glam., company director; William R. Bailey, Angel Hotel, Cardiff, member at Lloyd's; Richard Cadman, Littlegate, Llandaff, company director; Frederick W. Mathias, Rest-Harrow, Llanishen, stockbroker; Charles R. Wheeler, 2, Cheyne Court, S.W.3, company director; Geoffrey B. Dawson, "Claremont," Malpas, Mon., timber importer (all permanent). Solicitors: Ingledew & Sons, 4, Mount Stuart Square, Cardiff. The file number is 289,387.

**R. F. D. COMPANY, LTD.**—Capital £5,000 in £1 shares. To acquire, as from January 1, 1934, the business of an aeronautical engineer carried on by Reginald F. Dagnall at Guildford, as the "R. F. D. Company." The subscribers (each with one share) are:—R. F. Dagnall, 17, Stoke Road, Guildford, aeronautical engineer, and Nicholas Cockshutt, 119, High Street, Guildford, solicitor. R. F. Dagnall is permanent governing director. Solicitor: Nicholas Cockshutt, 119, High Street, Guildford.

**BROOKE MARINE CONSTRUCTION COMPANY, LTD.**, Adrian Works, Alexandra Road, Lowestoft.—Capital £20,000 in £1 shares. To carry on the business of marine and general engineers and manufacturers of and dealers in engines, motor craft and other vessels, machine and engineering toolmakers, manufacturers of aircraft and aircraft engines, etc. The directors are:—David A. V. Rist, The Red House, Mettingham, near Bungay, Suffolk. Arthur C. Doo, 1K, Buckingham Avenue, Whetstone, N.20. John W. M. Brooke, The White Cottage, Oulton Hall, Lowestoft. John M. Brooke, Tettenthall, Oulton Broad, Suffolk, engineers.

## PATENT AERONAUTICAL SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

### APPLIED FOR IN 1933

Published July 5, 1934.

4,478. J. AIVAZ. Aerial propellers with variable pitch. (411,601.)  
7,596. J. M. BOYKOW. Automatic steering or stabilizing devices, particularly for aircraft. (411,620.)